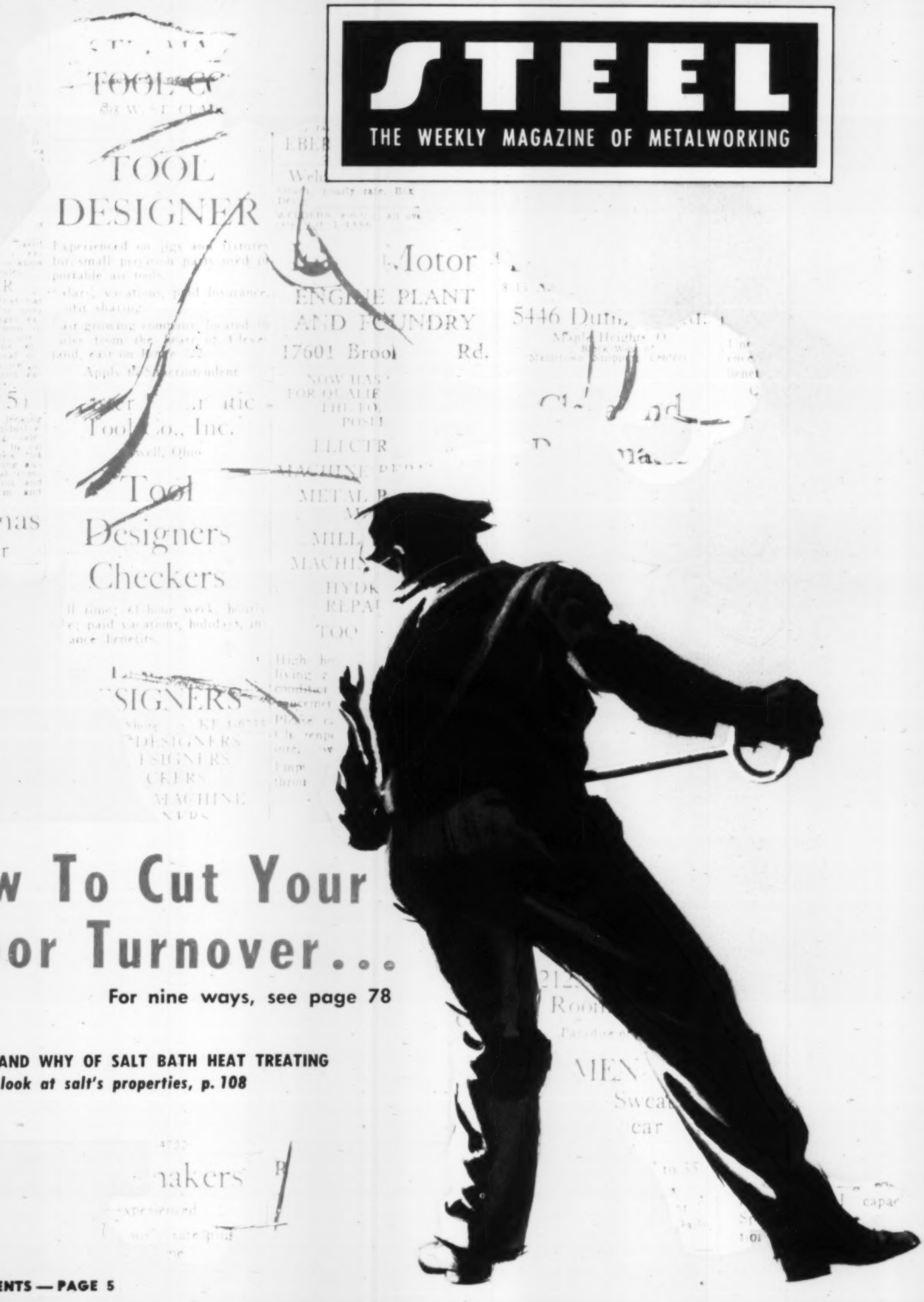
FEBRUARY 15, 1954

STEEL

THE WEEKLY MAGAZINE OF METALWORKING


TOOL CO
TOOL DESIGNER
Experienced on jigs and fixtures for small precision parts used in portable air tools.
Salary, vacations, paid insurance, profit sharing.
Apply to Superintendent
Tool Co., Inc.
Tool Designers Checkers
SIGNERS
DESIGNERS
MACHINE
Motor
ENGINE PLANT AND FOUNDRY
17601 Brook Rd.
5446 Dun
Maple Heights, O.
NOW HAS
ELECTR
MACHINE REP
METAL
MILL
MACHIN
HYDR
REPAI
TOO
Room
MEN
Swea
makers
experienced

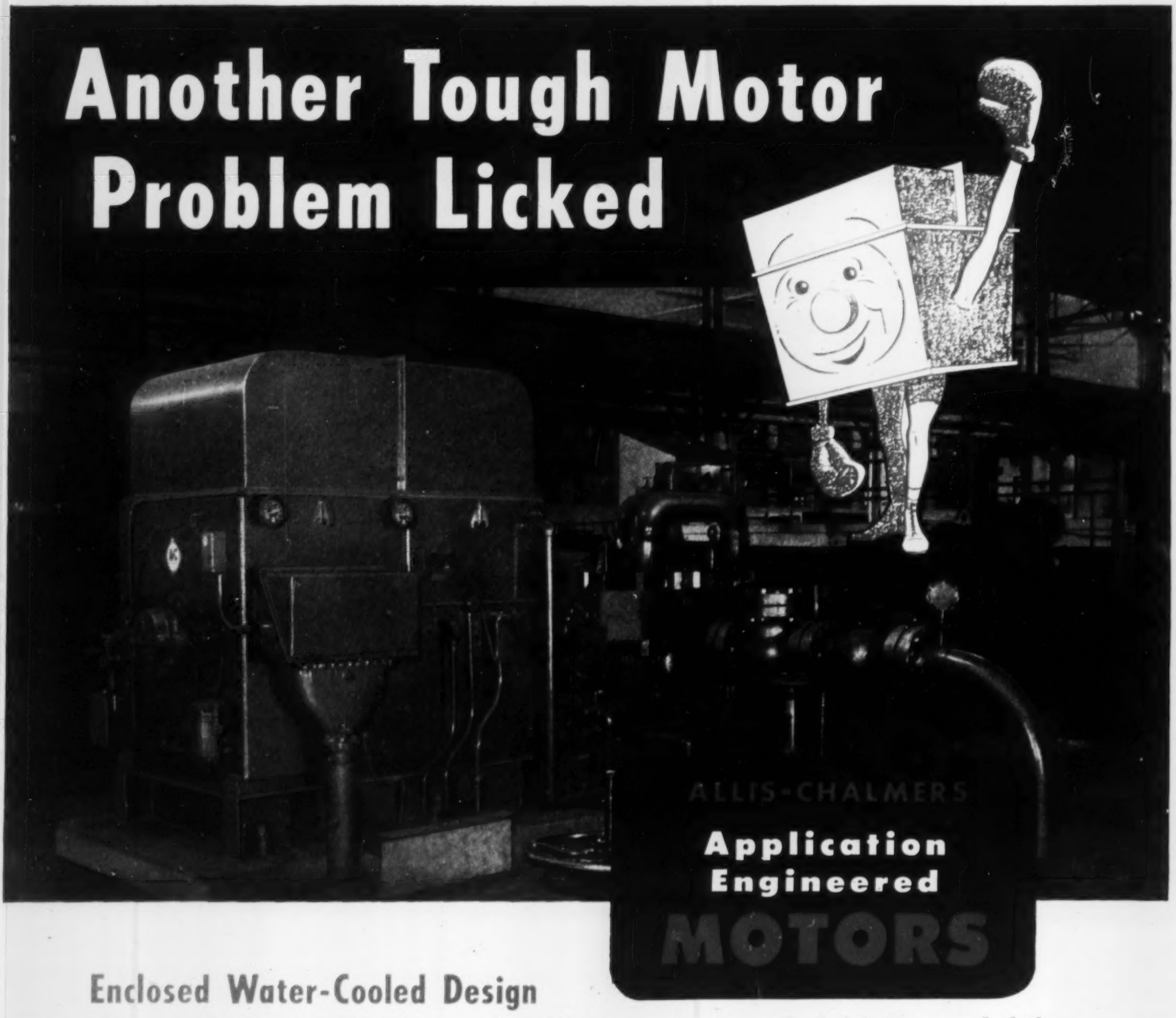
How To Cut Your Labor Turnover . . .

For nine ways, see page 78

✓ **HOW AND WHY OF SALT BATH HEAT TREATING**

Fresh look at salt's properties, p. 108

CONTENTS — PAGE 5



Another Tough Motor Problem Licked

Enclosed Water-Cooled Design Keeps Out Iron Oxide to Cut Maintenance and Add Dependability

In revamping the high pressure water system at the *Gary Steel Works'* 38-inch strip mill, *United States Steel Corporation* engineers encountered a serious problem. For most efficient installation and operation, one of the descaling pumps and its motor belonged right in the mill. But iron oxide from slabs tends to clog air-cooled motors . . . imposing an impractical cleaning schedule on maintenance crews.

Drawing on experience gained in solving a variety of special motor problems, Allis-Chalmers designed the 1500-hp, 6900-volt, 3580-rpm, water-cooled cage motor shown above.

With its totally enclosed design, incorporating an air-to-water heat exchanger, this motor rarely needs cleaning. Moreover, motor life is lengthened and reliability increased because insulation is protected and uniform temperatures are maintained. (For more information about water-cooled motors, ask for Bulletin 05B7682.)

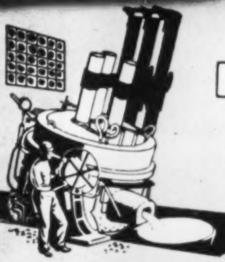
Bring *Your* Motor Problems to A-C

Whether you need a single motor or electrical equipment for a complete rolling mill, Allis-Chalmers can supply equipment to suit the application. So for help in solving your motor problems, contact your A-C representative, or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4164

ALLIS-CHALMERS

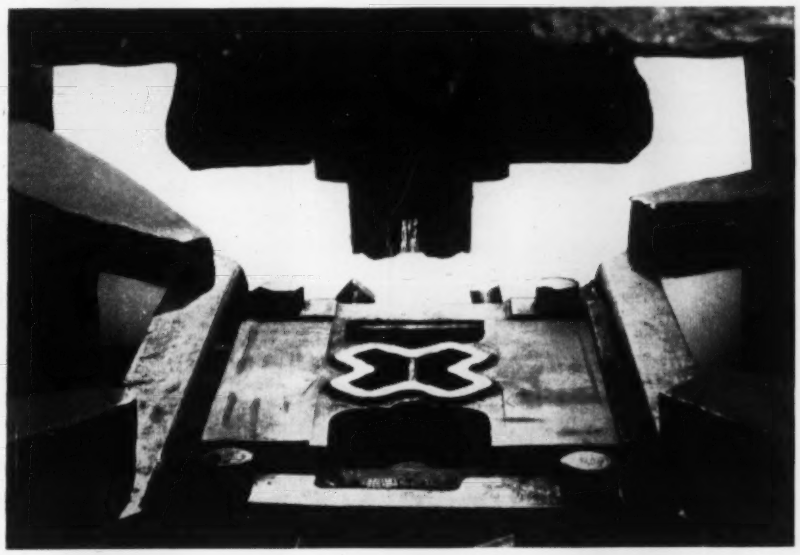
A-C ALLIS-CHALMERS



Tool Steel Topics

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation



In the center is the four-piece, composite trimmer die used in one of the service tests on Lehigh H tool steel. In the cold-trimming of 20,000 drop forgings, the two die components hardened by the high-temperature, "short-cut" method showed only one-half as much wear as the other two die components heat-treated in the usual way.

"SHORT-CUT" Hardening Improves Wear of High-Carbon, High-Chrome Steels

Production men often lose patience, even tear out their hair, while waiting the many long hours necessary for the heat-treatment of tools and dies made from the high-carbon, high-chromium tool steels. When treating large dies, for example, it's not unusual to have a pack-hardening cycle of 24 hours or even longer. But until lately there's been no short-cut that doesn't result in improperly treated tools.

Faster Treatment

That's why we're happy to report that our research men are developing a much faster method of heat-treatment — one that not only promises to save valuable time, but also imparts better wear-resistance than the usual heat-treatment for high-carbon, high-chromium steels.

It's a high-temperature treatment that does the trick. Ordinarily these grades are hardened by a long soak at 1850 F, followed by air-quenching. The new treatment involves a much shorter soak at about 2100 F. By no means perfected as yet, this new wrinkle was developed in a series of experiments in which the dies hardened at 2100 F were used in actual production work along with similar dies hardened at 1850 F.

Longer Wear

Dies used for cold-trimming drop forgings, for example, were hardened by both methods. These were composite dies, each made up of four assembled sections. Operating conditions were exactly the same. Careful measurements were made at regular intervals to determine the amount of wear between the cutting edges opposite each other. After trimming 20,000 forgings, the wear of the die edges was .012 in. on the pair of trimmer die components treated by conventional methods; on the dies hardened by the high-temperature cycle the wear amounted to only .006 in. — just half as much.

Data Now Available

Tests are continuing. If you'd like to have the details of our work to date, drop us a line at Bethlehem, Pa. Address your request to Room 1037A, Publications Department, Bethlehem Steel Co.

BETHLEHEM TOOL STEEL ENGINEER SAYS:

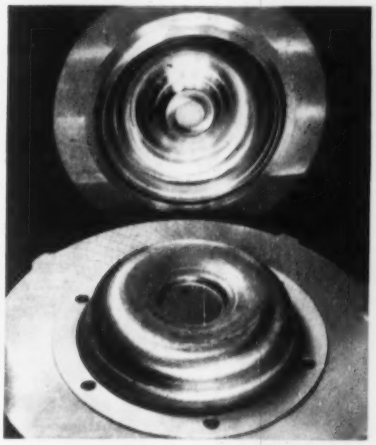
Here are five fundamentals of successful toolmaking.

It's always a challenge for toolmakers to produce tools or dies which will be both hard enough to stand up in service and ductile enough not to crack, either in the making or in use. To get the necessary ductility, most tools are hardened below the maximum obtainable.

Once the proper balance between hardness and ductility has been determined in service, the maintenance of this balance helps to assure good performance. But good tool performance depends on more than that. In fact, there are these five fundamentals which must be considered:

1. Good tool design
2. Sound tool steel, of proper grade
3. Correct heat-treatment
4. Proper grinding
5. Proper application of the tool

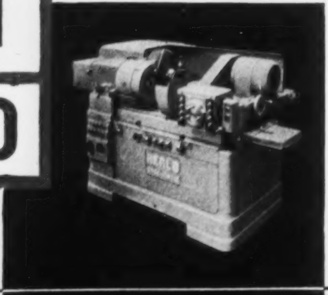
These five fundamentals are like links in a chain; a deficiency in any one of these steps, or links, can lead to trouble. Poor tool design, for example, may often result in quenching cracks. Careful attention paid to each of these factors will help you to get the best tool life.



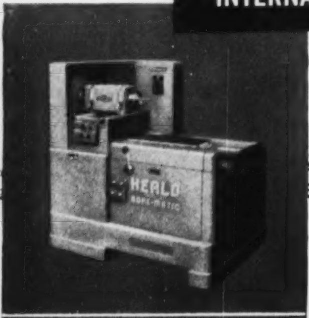
RESTRIKE DIE

This restrike die made of A-H5 tool steel is one of the precision tools used in making parts for torque converters. A-H5 has better wear-resistance than standard oil-hardening steel and holds more accurately to size during heat-treatment. It's a general-purpose, air-hardening grade containing 5 pct chromium, yet it's as economical as most oil-hardening tool steels.

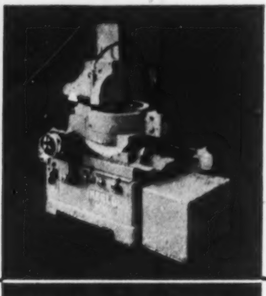
HEALD



INTERNAL GRINDERS



BORE-MATICS



SURFACE GRINDERS

3 Ways to CUT PRECISION FINISHING COSTS

● Whether your products call for internal grinding, borizing or rotary surface grinding operations, there's a Heald machine that can help you do the job faster, easier and at lower cost — and with the highest accuracy and precision, too.

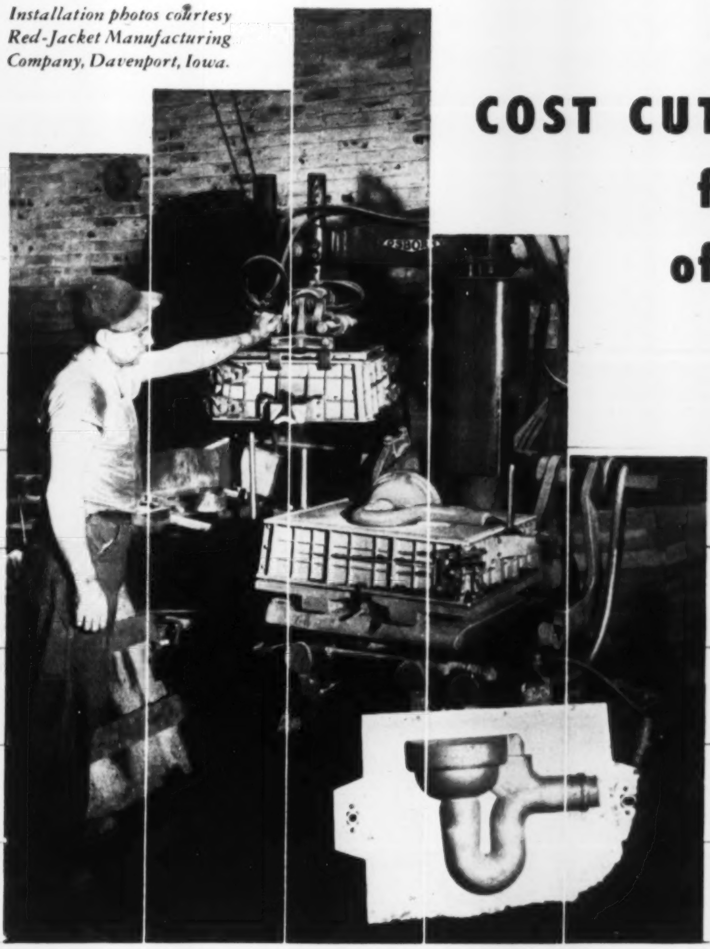
For these three complete lines of Heald machines have repeatedly *proved* their ability to speed production and cut unit costs — on long or short runs, simple or complex parts, singly or several at a time.

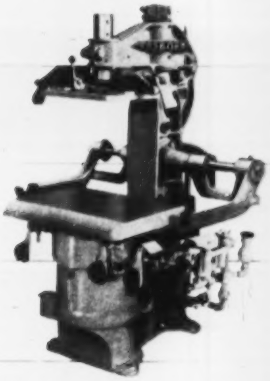
Remember — when it comes to precision finishing, IT PAYS TO COME TO HEALD.

THE HEALD MACHINE COMPANY
WORCESTER 6, MASSACHUSETTS
Offices in Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

Installation photos courtesy Red-Jacket Manufacturing Company, Davenport, Iowa.

COST CUTTING IDEA for production of sand molds





Osborn Rota-Lift now completely mechanizes large match-plate molding. *1 Man* and *1 Machine* produce complete molds ready for pouring.

RESULTS—more efficient production of uniform, accurate molds . . . lower cost per mold.

CUTS MOLDING TIME IN HALF. Two to three times as many molds are now being produced per day after this foundry replaced its former manual methods with Osborn Rota-Lifts. Today, one man and one machine turns out complete molds in less than half the manhours formerly needed. What's more, the molds are uniform . . . cost per mold is less.

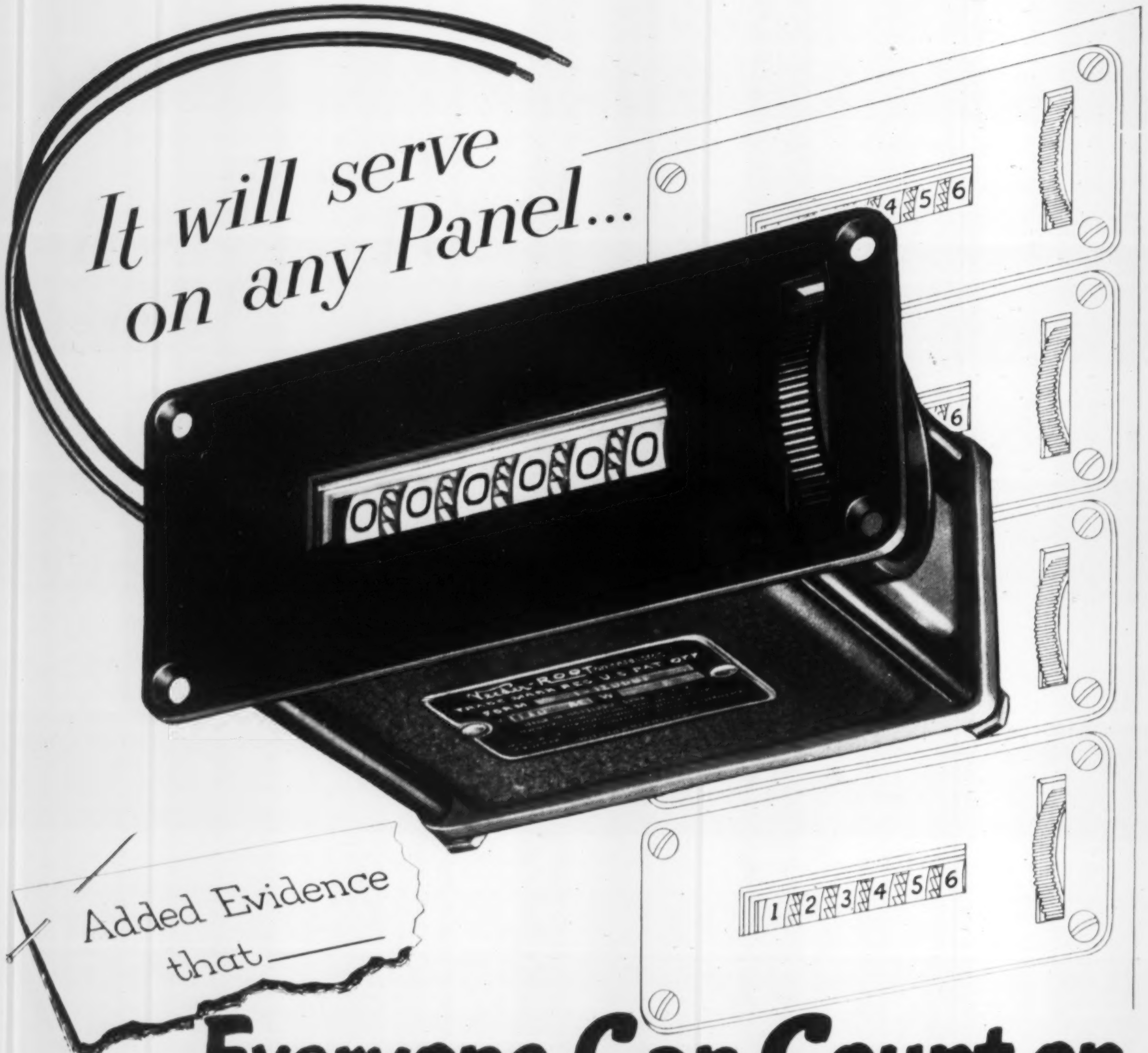
Similar savings in manhours and costs are being realized every day wherever foundries mechanize and modernize molding methods with Osborn equipment. Your Osborn molding specialist will gladly show how Osborn's developments in sand molding and core blowing can be put to work for you . . . to save money now.

Call or write The Osborn Manufacturing Company, Dept. EE-15, 5401 Hamilton Avenue, Cleveland 14, Ohio.

Another example of
Osborn leadership
and advanced engineering

OSBORN

MOLDING MACHINES   CORE BLOWERS


It will serve on any Panel...
Added Evidence that

Everyone Can Count on

VEEDER-ROOT

REPORTER AT LARGE . . . that's what you might call this new Veeder-Root Reset Magnetic Counter . . . adaptable to remote counting from machines or processes to central boards or instrument-clusters, wherever you want to put them. NOW . . . what can your imagination do with these few facts? For the *full facts*, write:

VEEDER-ROOT INCORPORATED
"The Name That Counts"
HARTFORD 2, CONNECTICUT
Chicago 6, Ill. • New York 19, N. Y. • Greenville, S. C.
Montreal 2, Canada • Dundee, Scotland
Offices and Agents in Principal Cities

"Counts Everything on Earth"

This Week in Metalworking

STEEL
THE WEEKLY MAGAZINE OF METALWORKING
Vol. 134 No. 7 February 15, 1954

✓NEWS ✓PRODUCTION-ENGINEERING ✓MARKETS

☑ **Metalworking Outlook** 59

As the Editor Views the News 63
Editor-in-Chief E. L. Shaner gives his thought-provoking views on matters of interest to the metalworking industry

Windows of Washington 74

Mirrors of Motordom 81

The Business Trend 85
Follow the course of business activity in charts and on the industrial production index

Men of Industry 89

☑ **Technical Outlook** 107

Salt Baths . . . Versatile Preformer on the Heat Treating Team 108
Here's an expert's account of what's new on salt baths used in heating and cooling metals

What Can Be Done with Stampings 112
A long look is taken at castings, forgings and stampings. Fourteen-part assembly cut down to one operation

How to Classify Copper Base Alloys 114
Last in a series. Efforts by professional groups have resulted in simplification and standardization of alloys

Progress in Steelmaking 128
Titanium Carbide . . . New Elixir of Life for Rod Mill Guides—Two authorities describe advantages

New Products and Equipment 137

How to Use Aluminum Tanks 154
Those concerned with corrosion, processing, storage and transporting will be interested in welding procedures

☑ **The Market Outlook** 161
Metal Prices and Composites begin on Page 162

Nonferrous Metals 164

Behind the Scenes 6
Letters to the Editors 10
Calendar of Meetings 27
Foreign News 77
Obituaries 95
Helpful Literature 141
New Books 158

Editorial, Business Staffs—16. Advertising Index—194. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $7.50; two years $15; all other countries, one year $20. Single copies (current issues) 50 cents. Metalworking Yearbook issue $2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1954 by Penton Publishing Co.

down
down
down
Go the
Prices of
PLA-TANK®
DUCTS AND STACKS

Yes, we've just made drastic cuts in the prices of our famous duct and stack systems. Our research and product development program is beginning to *really* pay off. We can now make better-than-ever Pla-Tank ducts and stacks at less cost to *us.* So, we're passing the savings along to *you.*

These new, low prices are the result of considerable experience building large systems and improved manufacturing methods. The use of a new lay-up system gives a lighter product for easier handling and neater installation with the *tremendous* advantage of extra added strength.

Now, you can get improved PLA-TANK ducts and stacks (in standard round shapes *only*) at unbelievably low prices. Pla-Tank ducts and stacks are now without question your best buy — and highly competitive with *all* types of chemical resistant plastic material.

Write for free Data Sheets and NEW LOW Price Lists Today!

P-16

THE Chemical CORPORATION
56 Waltham Ave., Springfield 9, Mass.

(Advertisement)

DESIGN IN STEEL CUTS WEIGHT 48% LOWERS COST 52%

PROPER design in welded steel can cut manufacturing costs an average of 50% on many products. In addition, steel designs are stronger, more rigid, can be fabricated with less material and fewer shop manhours.

The machine arm shown in figure 1 originally required 182 pounds of gray iron and cost $38.25 to cast and machine.

By converting to welded steel construction the arm (Fig. 2) can be built for only $20.06 and weighs but 86.8 pounds. Since steel is three times stronger and twice as rigid as gray iron, the wall sections of the steel design are 3/16" plate instead of the original 5/8" dimension. As a result, the weight saving is 48% which is particularly important because of inertia factors on this particular component.

Utilizing standard mill shapes, the rugged steel box-type construction is fabricated at 52% less cost using simple fixtures. Machining and finishing is easier and takes less time, to increase shop efficiency.

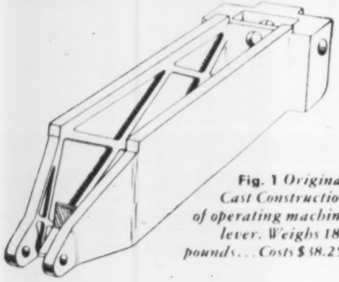


Fig. 1 *Original Cast Construction of operating machine lever. Weighs 182 pounds... Costs $38.25.*

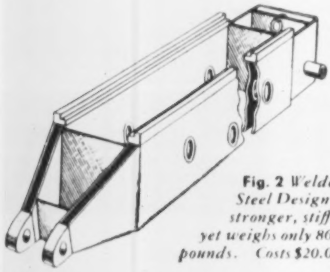


Fig. 2 *Welded Steel Design is stronger, stiffer yet weighs only 86.8 pounds. Costs $20.06.*

HOW TO DESIGN FOR STEEL

Machine Design Bulletins giving latest methods for converting product designs to steel with Lincoln's Weldesign System are available by writing The Lincoln Electric Company, Cleveland 17, Ohio. Write Dept. 1603

THE LINCOLN ELECTRIC COMPANY
CLEVELAND 17, OHIO
THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

behind the scenes

It Was Ever Thus

We were thumbing through our mail the other morning and came across the February, 1954, issue of *Letters*, an external house organ distributed by the Wolf Envelope Co. of Cleveland. In it was a wonderful series of telegrams from Joseph Blotz, the impulsive purchasing agent. He's a fellow who is well known to us all. We thought you would get a chuckle or two out of following him through a typical year's operation. . . .

March 1, 1953
HOLD UP ALL DELIVERIES.
Joseph Blotz

April 1, 1953
CANCEL EVERYTHING.
Blotz

May 1, 1953
CONFIRM CANCELLATION IMMEDIATELY.
Blotz

July 1, 1953
ON MAY 1 WE ASKED FOR CONFIRMATION ON CANCELLATION. THIS TELEGRAM A BOOKKEEPING ERROR. KINDLY REINSTATE MAY ORDER.
Joe

September 1, 1953
IN A BAD WAY FOR GOODS. ANYTHING YOU CAN DO WILL BE APPRECIATED. PLEASE WIRE DELIVERIES COLLECT. YOUR BEST FRIEND.
Joe

October 1, 1953
MANY, MANY THANKS FOR THE SHIPMENT. CAN'T TELL YOU MY GRATITUDE, BUT KNEW YOU WOULD COME THROUGH FOR ME. IF YOU CAN SQUEEZE OUT A FEW MORE, I'LL NEVER FORGET IT. REGARDS TO ALL THE FAMILY.
Joe

November 1, 1953
SORELY NEED ANYTHING. IN TERRIBLE SHAPE ON ALL SIZES. JOB AT STAKE. HELP ME.
Joe

December 1, 1953
IT'S AWFUL. ALL BRANCHES WILL HAVE TO CLOSE FOUR DAYS BEFORE CHRISTMAS. THE BOSS IS TEARING MY HAIR OUT. PLEASE SHIP ANYTHING. FAST!
Your Little Joe

December 10, 1953
PLEASE.
Joe

December 26, 1953
CANCEL EVERYTHING!!!
Blotz

Pipe Dream

Did you read about the "Greenskeepers' Pipe Dream" described in STEEL's Jan. 25 "Technical Outlook"? Apparently Mr. Charles Nobis of Dayton, O., did for he sat himself right down and wrote us a letter.

You will remember that the item told about a Cleveland golf club that had long delayed installation of a fairway watering system because the $75,000 price tab was a little heavier than they felt they could pick up.

A local manufacturer of plastic pipe rose to the occasion and took on the job for a paltry $12,000. Labor cost made the difference since plastic pipe need not be installed below the frost line. Thus, where metal pipe required deep digging, a shallow trench serves the purpose for plastic pipe.

Now to get back to Mr. Nobis and his interest in this item. Being endowed with the genius of folks who like their leisure in big bunches, he wrote:

> "Who makes it and where can I get it? Plastic pipe sounds like the answer to my lawn watering problem."

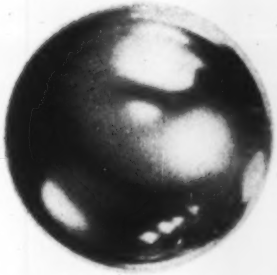
And right he is. Because intrigued with his idea, we checked the manufacturer. Sure enough, he is currently experimenting with a lawn watering kit which will set right into the ground and give you "hammock control" over your lawn watering chores.

To install, just lift the sod a couple of inches, tuck in the plastic pipe, press the sod back into position and turn on the faucet.

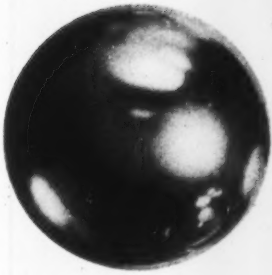
Brother, that's living Shrdlu style, that is!

Shrdlu

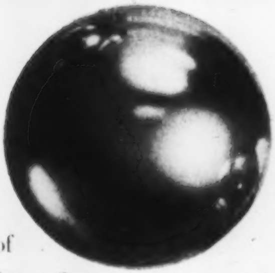
(Metalworking Outlook—Page 59)

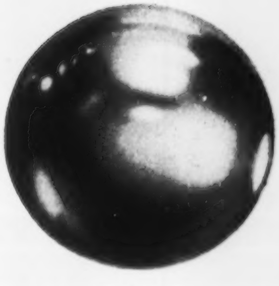


Federalize!



—AND YOU'RE AHEAD





Have you looked at Federal lately? You'll find important changes in this, one of the world's largest ball bearing producers...changes that reflect the new precision, the new quality controls, the new alloys, the new machines that are hard at work to make today's Federal bearings the *modern* leaders in their field.

For the America that rolled on Federal decades ago is a new America rolling on a new Federal today...on the highways...in industry...in the air.

Change is the order of the day—in your plant as in ours...and leadership for you, as well as among the great ball bearing companies of the world, is only held by keeping ahead of tomorrow.

For the industrial purchasing powers of the nation cannot stand still. They are learning that yesterday's No. 2 sources of supply have earned the right to become today's No. 1.

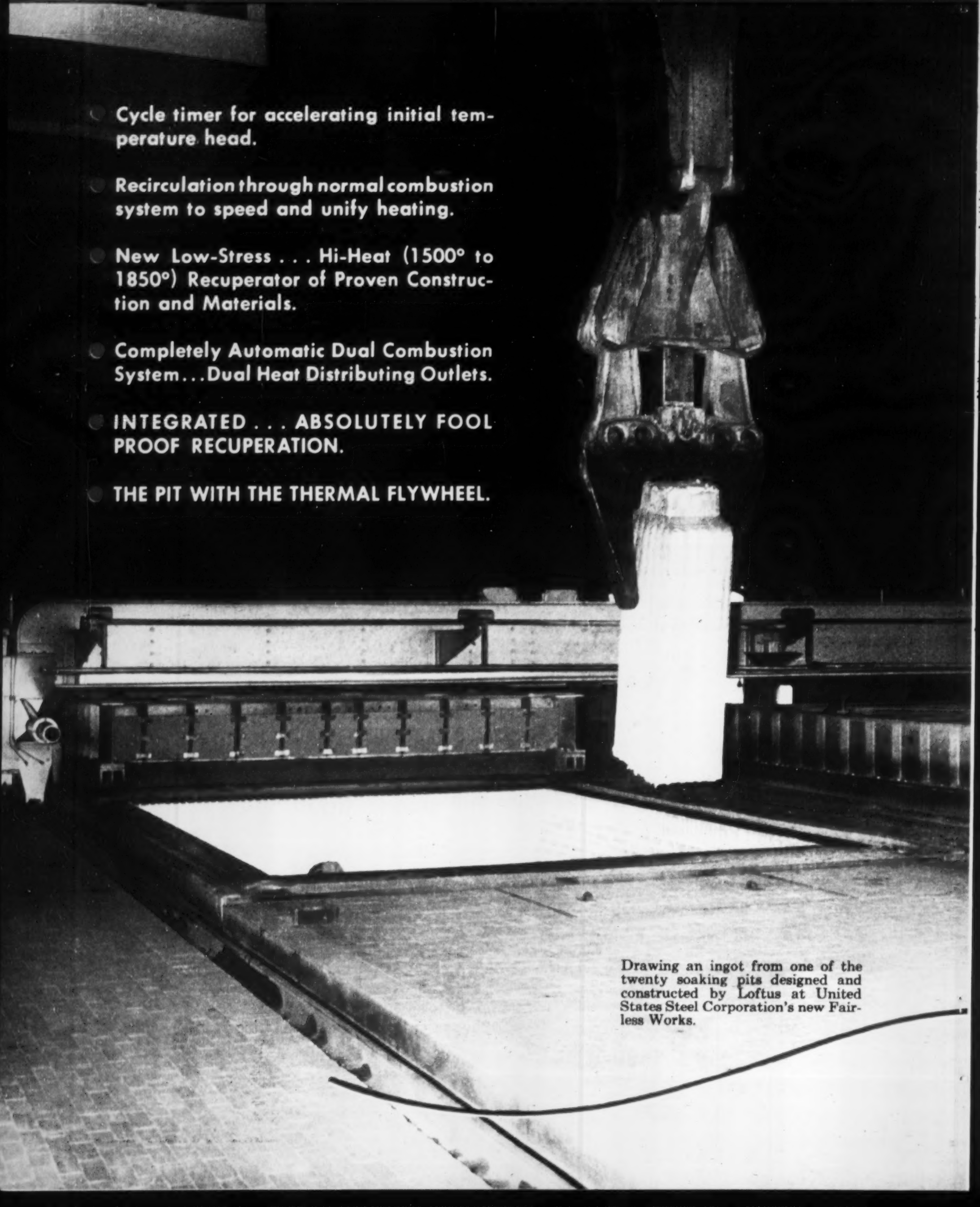
Federalize—and you've modernized.

Federalize—and you're ahead!

One of the world's largest ball bearing manufacturers THE FEDERAL BEARINGS CO., INC.
Poughkeepsie, N. Y.
Producers of the *Modern* ball bearing

Federal BALL BEARINGS

1954 DESIGN and

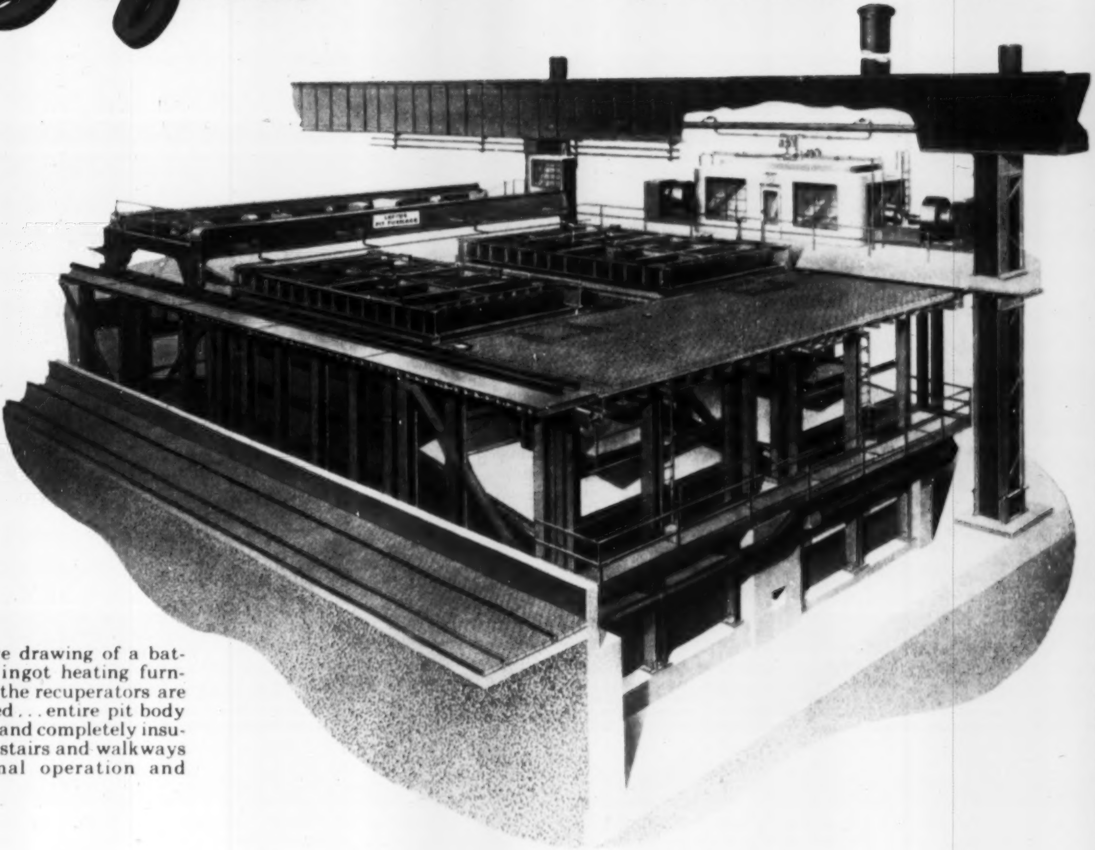


- Cycle timer for accelerating initial temperature head.
- Recirculation through normal combustion system to speed and unify heating.
- New Low-Stress . . . Hi-Heat (1500° to 1850°) Recuperator of Proven Construction and Materials.
- Completely Automatic Dual Combustion System . . . Dual Heat Distributing Outlets.
- INTEGRATED . . . ABSOLUTELY FOOL PROOF RECUPERATION.
- THE PIT WITH THE THERMAL FLYWHEEL.

Drawing an ingot from one of the twenty soaking pits designed and constructed by Loftus at United States Steel Corporation's new Fairless Works.

PERFORMANCE

with Loftus PIT FURNACES



True perspective drawing of a battery of Loftus ingot heating furnaces. Note that the recuperators are wholly integrated . . . entire pit body is rigidly bound and completely insulated . . . access stairs and walkways facilitate normal operation and maintenance.

The Loftus top-fired recuperative pit furnace combines all the accepted improvements in the modern ingot heating furnace PLUS new features designed to accelerate production . . . improve temperature uniformity . . . increase fuel economy . . . and reduce pit maintenance and steel conditioning costs. The improved Loftus tile recuperator reduces leakage and provides a "Thermal Flywheel" which helps return the pit to normal operating temperature in the shortest possible time after charging.

Each Loftus Pit Furnace features "Heat Acceleration" . . . synchronized to ingot charging temperature . . . to increase production; and "Flame Tempering," to prevent overheating, and to insure uniformity. Write today.

WRITE TODAY! **Actual operating data on Loftus Pit Furnaces will be made available upon request. Ask for latest literature describing in detail Loftus 2-way top-fired recuperative soaking pits.**

Loftus ENGINEERING CORPORATION

Designers and Builders of Industrial Furnaces

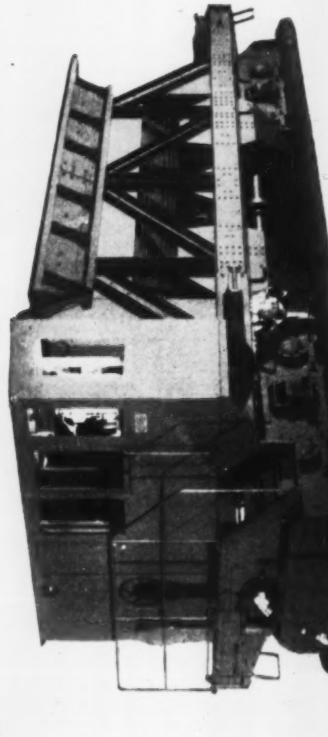
610 Smithfield Street, Pittsburgh 22, Pennsylvania

FOR THE VERY BEST

See ATLAS

TRANSFERS - SCALE CARS
COAL CHARGERS - COKE QUENCHERS

60-TON BOTTOM DUMP ORE TRANSFER CAR



This is one of the latest Atlas Transfer Car designs arranged for modern hydraulic operation. It provides close control of the discharge and eliminates freezing of air lines in the winter. A hydraulically operated pusher arm is provided of the latest horizontal telescoping type. The brakes also are hydraulically operated and apply automatically if pressure is low or if power fails.

At this plant the car must cross over to the coke track to shift coke cars. There is no conductor rail on the coke track so the car is equipped with a motor-driven cable reel attachment, enabling it to perform this switching function. When operating on the cable reel the collector shoes are cut out and automatically raised off of the conductor rails. The cab is overhung to give the operator a line of vision down the side of the car.

THE ATLAS CAR & MFG. CO.
ENGINEERS and MANUFACTURERS
1100 IVANHOE ROAD CLEVELAND 10, OHIO

LETTERS
TO THE EDITORS

Tool Job Well Done

In the article "Metallurgists Offer Cutting Tools a Bigger Bite" (Jan. 11, p. 70), your Machine Tool Editor, Robert F. Huber, has made a very good analysis of free-cutting steels. I would appreciate your sending me 12 copies of that article.

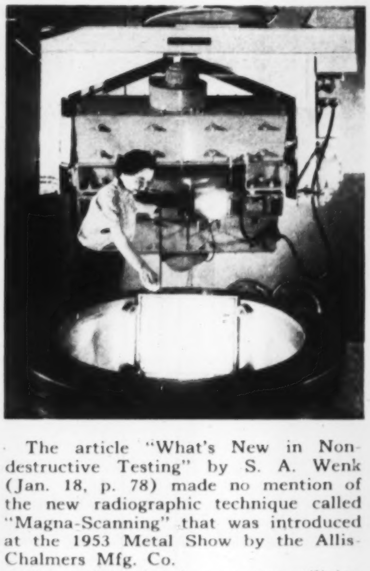
L. I. Barker
district sales manager
Republic Steel Corp.
Cleveland

Will you please send us two tear sheets of the article . . .

M. Ilgen
Sierra Drawn Steel Corp.
Los Angeles

- *Sent.—ED.*

X-Ray Gets New Look



The article "What's New in Nondestructive Testing" by S. A. Wenk (Jan. 18, p. 78) made no mention of the new radiographic technique called "Magna-Scanning" that was introduced at the 1953 Metal Show by the Allis-Chalmers Mfg. Co.

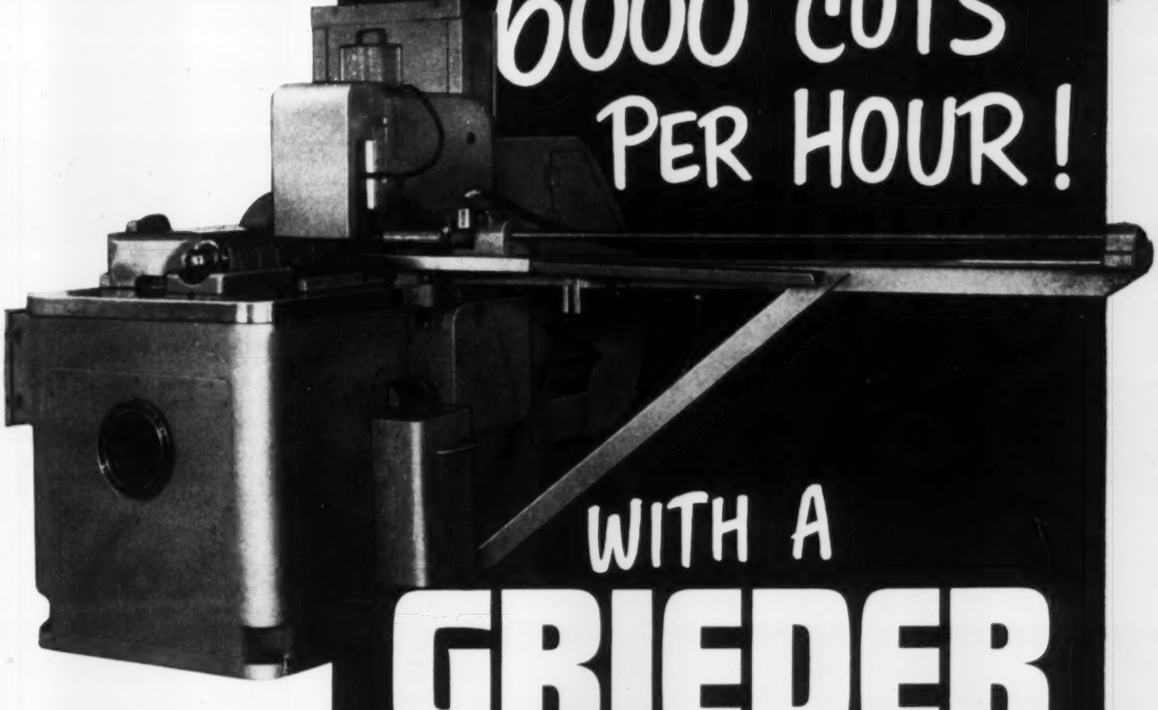
Magna-Scanning is a process utilizing the 22-million-electron-volt betatron to produce with one exposure a continuous, enlarged, radiographic image of an object which may be as long as 10 feet. It combines the speed of scanning and the advantage of magnification for the inspection of specimens such as long heavy welds.

The process is possible with the betatron because its radiation emanates from a point source and has extremely little scatter radiation. Therefore, sharply defined, direct geometrically enlarged image is produced by having the ratio of distances between the source and specimen and the specimen and the film correspond to the desired magnification.

Scanning is accomplished by sweeping the X-ray beam back and forth along the length of the specimen. This is done by rotating the betatron through the required arc during exposure. The betatron is mounted so that its axis of rotation passes through the point source.

The betatron (shown above) is manu-

Please turn to p. 12

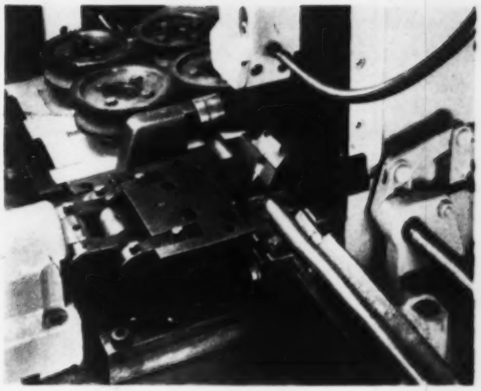


6000 CUTS PER HOUR!

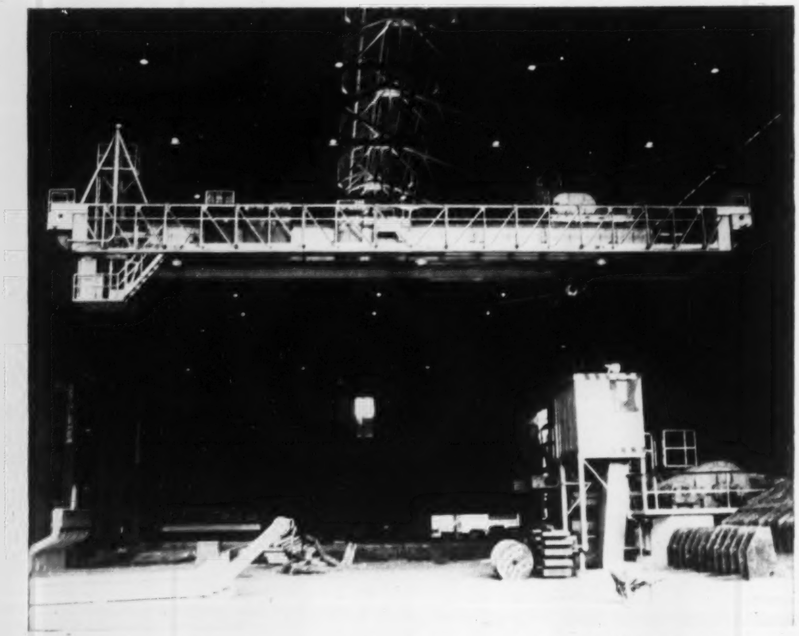
WITH A GRIEDER TUBE CUT-OFF MACHINE

NO DISTORTION . . . MINIMUM BURR . . .
ACCURACY WITHIN .002″ . . .
CUTS ANY SHAPE . . .

Cut steel tubing at the amazing speed of 6000 cuts per hour. The Grieder Tube Cut-Off Machine features a heavy duty air operated combination clutch and brake unit that allows continuous operation at this terrific rate of production. Fully automatic . . . Rate of feed: 600 feet per minute . . . True cutting. Get full information, multiply your tubing production, reduce costs, write *today*.



GRIEDER INDUSTRIES, INC.
BOWLING GREEN, OHIO
SALES OFFICE: 309 RICHARDSON BLDG., TOLEDO 4, OHIO



25 ton Bedford Magnet Crane with 90 ft. span over the Blooming Mill Slab Yard in the new mill recently constructed by Detroit Steel Company at New Boston (Portsmouth), Ohio.

Another Bedford Crane for Detroit Steel

Proof of the superiority of Bedford Cranes is found in the high percentage of *repeat orders* from important owners through the years.

In steel mills, power plants, and throughout industry . . . wherever superior performance is *expected*, owners enthusiastically recommend Bedford Cranes.

Available in all types and sizes . . . from five tons to 350 tons and up . . . for all kinds of indoor and outdoor services . . . each Bedford Crane is individually engineered and precision built for its specific application.

Built to the most modern standards and backed by more than 50 years of specialized crane building *and utilization* experience . . . Bedford Cranes have won fame the world over for advanced design and for safe, smooth, dependable performance.

You are invited to consult a Bedford Engineer on your next crane problem . . . with all the facts on the table, we believe you too will make *your* next crane a Bedford.

(Write for complete catalog describing Bedford Cranes in detail.)

BEDFORD CRANES SERVICE

STEEL MILL CRANES

BEDFORD

BEDFORD FOUNDRY & MACHINE COMPANY, INC. · BEDFORD, INDIANA

LETTERS

Concluded from p. 10

factured by the Allis-Chalmers Mfg. Co. It has been used by the Army Ordnance Department for industrial radiography since 1945 and in general industry since 1952. At present there are 27 units in operation.

Walter H. Mueller
Allis-Chalmers Mfg. Co.
Milwaukee

Differences Uncovered

We believe you slipped just a little from your usual accuracy when you state in "Mirrors of Motordom" (Jan. 11, p. 44), "the 161-hp Mercury power plant, incidentally, is the same engine (as Ford) with modified induction." There are so many similar engines in the Ford empire that it is confusing to us laymen. But if you will check a little deeper, I believe you will find that the Mercury is a larger engine than Ford—256 cu in., versus 239 cu in.; 3⅝-in. bore versus 2½-in. It would take a little more than the run-of-the-mill factory induction modifications to pull up the Ford 130-hp to the 161-hp of the Mercury. That would be true even if we used the "same" engine, wouldn't it? I believe the same crankshaft is used, though, playing havoc with those who might want to "stroke" a Merc shaft and use it in a Ford block.

Congratulations on this splendid section in your magazine.

Donald Zueri
Danuser Machine Co.
Fulton, Mo.

- *Slip we did. Not only does the Mercury engine have a four-barrel carburetor, larger valves, heavier valve springs and a different manifold, it also has the larger bore which you speak of so correctly. In trying to point out how similar the Ford and Mercury engines are, we got trapped into an unfortunate over-simplification. Certainly, while the basic blocks are the same, a hopped-up Ford with Mercury induction would still be far short of 161-hp without the Mercury bore increase.—ED.*

Springy Powder Metal Parts?

We at Pow-Met Industries Inc. wish to congratulate you for your excellent article "Metal Powders Ease Production Headaches" (Jan. 26, p. 88). Yours is one of the few which admirably pointed the way to industry as to the limitations and assets to the various types of powder metal parts now available.

In the not too distant future we hope that Pow-Met will be able to assist in the progress of this industry. In the very near future I will send you samples of spring-like parts we have recently developed.

Charles G. Dudis
secretary & treasurer
Pow-Met Industries Inc.
Dayton, O.

I think the article "Metal Powders Ease Production Headaches" was very well written and should be of aid to everyone in the powdered metal industry.

M. W. Isaacson
general sales manager
Powdered Metal Products Division
Yale & Towne Mfg. Co.
Franklin Park, Ill.

no one else can do it!

the **LAPOINTE**

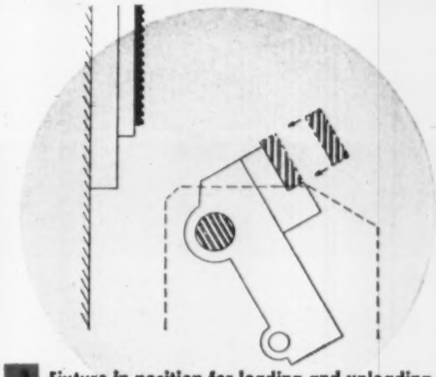
Mid-cycle Retilting AUTOMATIC FIXTURE

permits the BROACHING

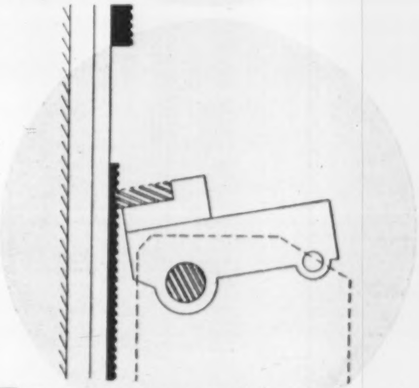
of NON-PARALLEL CONTOURS

in a single pass

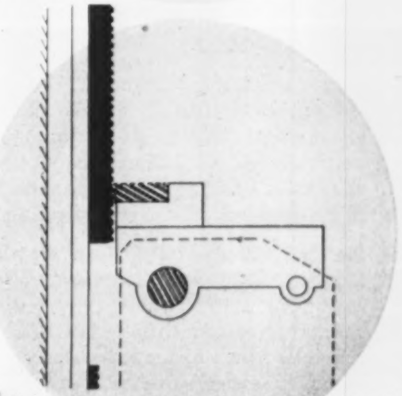
without removing the part from the fixture!



1. **Fixture in position for loading and unloading**



2. **Fixture in first operation of taper cut**



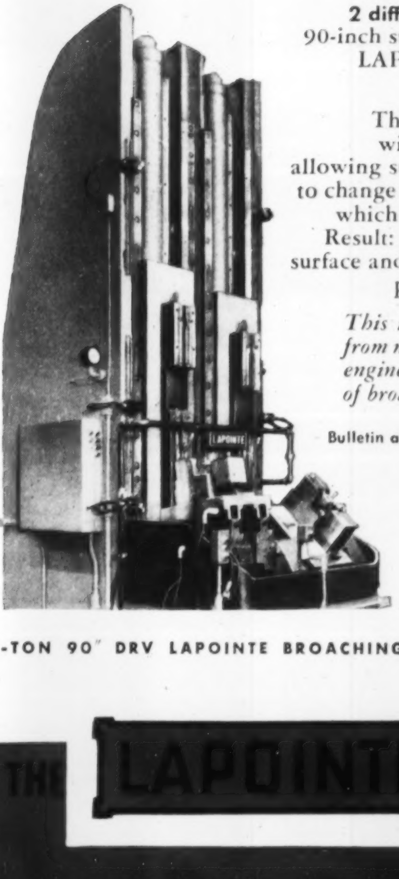
3. **Fixture in second operation, for straight cut**

Necks of stainless steel turbine blades are finished-broached at **2 different angles** on this 15-ton 90-inch stroke Double Ram Vertical LAPOINTE Surface Broaching Machine.

The broach is in two sections with a "dwell" between, thus allowing sufficient time for the fixture to change position for the second cut which occurs **on the same stroke.** Result: removal of .340" stock per surface and a production of 240 parts per hour, at 80% efficiency.

This is another example resulting from more than 50 years of Lapointe engineering . . . entirely in the field of broaching.

Bulletin available on request. Ask for DRV-3



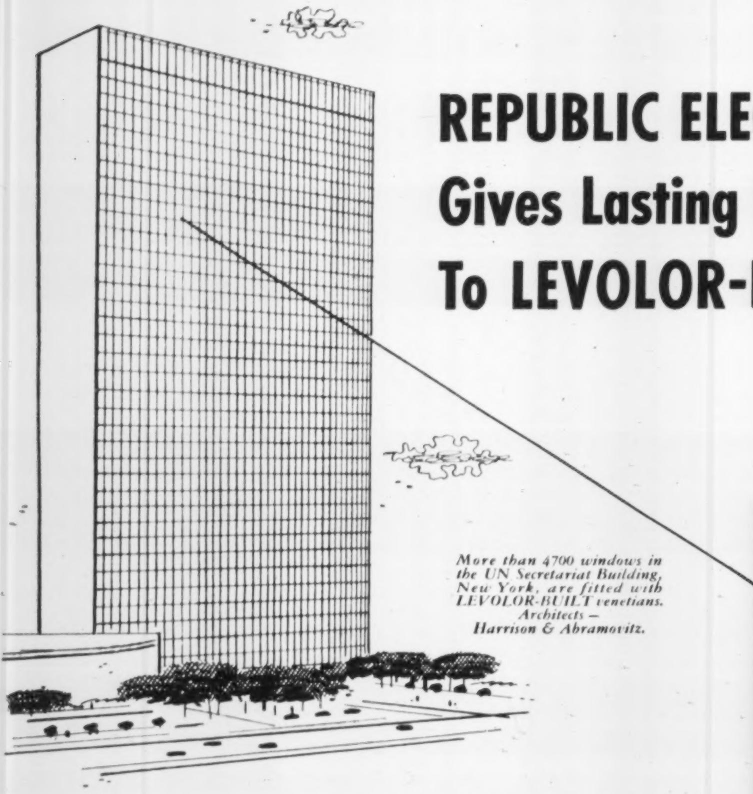
15-TON 90" DRV LAPOINTE BROACHING MACHINE

This mid-cycle retilting automatic fixture is synchronized with full electrical interlocks.

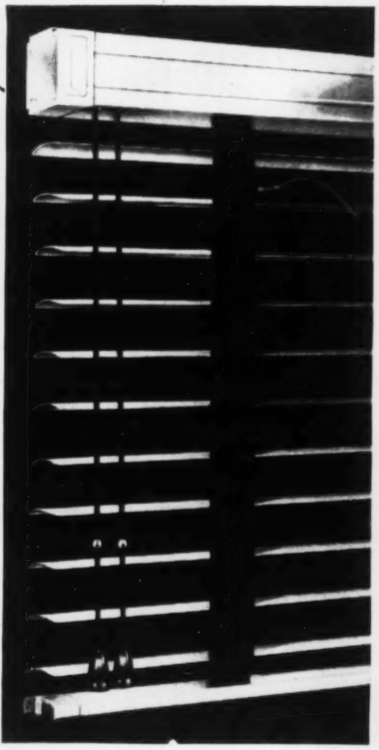
THE LAPOINTE MACHINE TOOL COMPANY
HUDSON, MASSACHUSETTS • U. S. A.
In England: Watford, Hertfordshire

THE WORLD'S OLDEST AND LARGEST MANUFACTURERS OF BROACHING MACHINES AND BROACHES

REPUBLIC ELECTRO PAINTLOK Gives Lasting Paint Adherence To LEVOLOR-BUILT Venetians



More than 4700 windows in the UN Secretariat Building, New York, are fitted with LEVOLOR-BUILT venetians. Architects — Harrison & Abramovitz.



- LEVOLOR-equipped venetian blinds feature an all-metal head and bottom-bar designed and engineered by Levolor Lorentzen, Inc.

Republic Electro Paintlok, the zinc-plated steel sheet that is chemically treated to take paints, lacquers and synthetic enamels . . . and to hold them for years . . . is one of the materials used for these reasons: 1) Electro Paintlok's resistance to corrosion; 2) Paint adheres better to Electro Paintlok; 3) Painted surfaces "resist chipping."

Here's proof of Electro Paintlok's ability to take and hold paint: Prior to fabricating the head and bottom-bar, the Electro Paintlok Sheets are roll painted and formed. The rolled shapes are then fed into machines called "Custom Makers" where they are cut to size, formed, pierced and lanced. Even under these severe fabricating operations the painted surface does not chip.

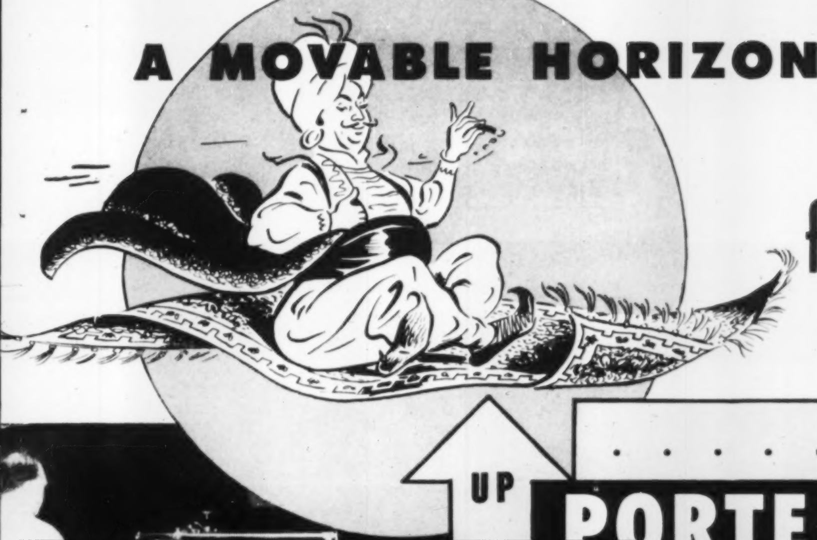
Get the complete story on Electro Paintlok for your painted or enameled steel products. Write for Booklet 525.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.

REPUBLIC STEEL

Republic
ELECTRO ZINC PLATED SHEETS
Electro Paintlok · Electro Zincbond
®

Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing



A MOVABLE HORIZONTAL SURFACE for YOU

UP

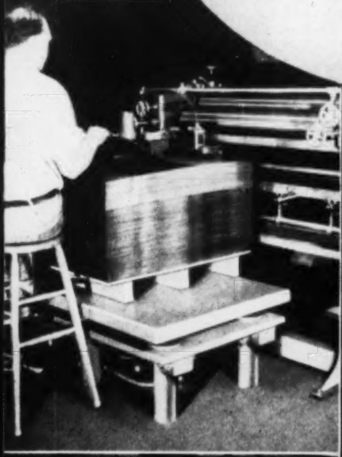
. . . . . REMOVE

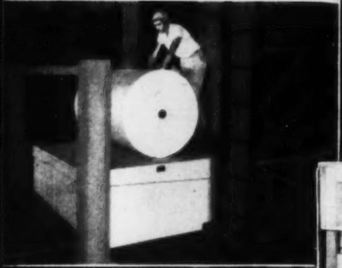
PORTELVATOR®

(The Handy Hamilton Portable Elevating Table)

FETCH . . . . .

DOWN



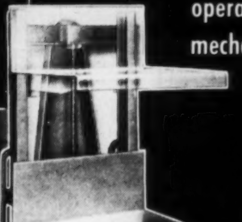


● **In hundreds of spots** throughout your operation you are required to lift or lower, take or fetch. Tools and dies must move from storage to machine—from machine to storage. Materials must be positioned. Machines must be fed.

Consider this fact! You can accomplish many industrial movements better and cheaper with Portelvator, the handy Hamilton portable elevating table, than with any other means or device regardless of cost. Take another look at your operation, then take a look at the exclusive mechanical lift principle which is employed in all Portelvator applications. Write for free bulletin P-5309.

●

Portelvator® employs an exclusive mechanical lift principle based upon power transmission through meshing worm, worm gear, and screw. Load capacities to 20 tons. Stationary or portable. Power operated or manual. Push button controlled or completely automatic. Vertical movement to 10 ft. Table sizes to suit requirements. Tilt tops. Flat tops. Roller tops. — Take another look at your operation . . . and at Portelvator. Write now!

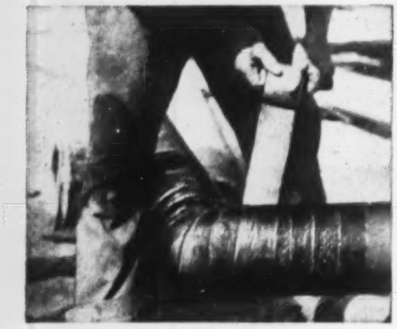


THE **Hamilton** TOOL COMPANY
848 SO. NINTH STREET • HAMILTON • OHIO • U • S • A

TO COMBAT CORROSION

Specify TAPECOAT®

...the Original Coal Tar Tape Protection for Pipe, Pipe Joints, Couplings and Tanks



TAPECOAT is a coal tar coating with a tar-saturated, close-woven fabric as a carrier for easy application, providing a *natural* protection against corrosion.

TAPECOAT serves as both bond and protection...requires no foreign adhesive.

TAPECOAT resists moisture, acids, alkalis, soil stress, electrolysis, chemical fumes, fly ash, salt water, salt-laden air, barnacles and other severe corrosive and abrasive conditions.

TAPECOAT is clean to handle and easy to apply by spiral or "cigarette" wrapping with the use of a torch to bleed the coating for a bond to the surface. It cuts maintenance and replacement costs.

SIZED TO THE JOB

TAPECOAT comes in rolls of 2", 3", 4", 6", 18" and 24" widths to meet varying requirements.

TAPECOAT has proved its dependability for gas and oil companies, railroads, telephone companies, air lines, ship builders and operators, water and sewage works, chemical and industrial plants, engineers and contractors ... in combating corrosion both underground and above ground.

PROVED IN SERVICE SINCE 1941

Write for descriptive brochure and prices

The TAPECOAT Company

Originators of Coal Tar Tape Protection

1543 Lyons Street, Evanston, Illinois

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

Editor-in-Chief, EARL L. SHANER *Editor*, IRWIN H. SUCH
Managing Editor, WALTER J. CAMPBELL
Assistant Managing Editors, VANCE BELL, JOHN S. MORGAN

News and Markets

WM. M. ROONEY	*Market Editor*
FRANK R. BRIGGS	*Associate Editor*
ARTHUR W. ZIMMERMAN	*Assistant Editor*
ROBERT O. JAYNES	*Assistant Editor*
H. VANYORX CALDWELL JR.	*Assistant Editor*
DAVID S. PARRETT	*Assistant Editor*
WILLIAM E. DEAN	*Assistant Editor*
MARY T. BORGERHOFF	*Assistant Editor*

Engineering and Production

ALLEN G. GRAY	*Technical Editor*
J. D. KNOX	*Steel Plant Editor*
ROBERT F. HUBER	*Machine Tool Editor*
THOMAS F. HRUBY	*Associate Editor*
HARRY E. CHANDLER JR.	*Associate Editor*
WM. R. WOLFE	*Assistant Editor*
NANCY SHAFFER	*Assistant Editor*
JEAN MCNAMEE	*Editorial Assistant*
MARY ALICE LYMAN	*Editorial Assistant*

Resident Editors

New York 17 60 East 42nd St.
B. K. PRICE, L. E. BROWNE
SAMUEL W. BAKER
Murray Hill 2-2581

Chicago 11 520 North Michigan Ave.
ERLE F. ROSS
Whitehall 4-1234

Pittsburgh 19 2837 Koppers Bldg.
ROBERT M. LOVE
Atlantic 1-3211

Detroit 2 6560 Cass Ave.
FLOYD G. LAWRENCE
Trinity 5-3024

Washington 4 1123 National Press Bldg.
E. C. KREUTZBERG
Executive 3-6849

London, 2 Caxton St., Westminster S.W. 1
VINCENT DELPORT
European Editor

Editorial Correspondents

Birmingham	R. W. KINCEY	Birmingham 3-1121
Buffalo	L. G. FELDMANN	Cleveland 5353
St. Louis	MAC L. HUTCHENS	Republic 7752
Youngstown	GEORGE R. REISS	7-1471
Los Angeles	NORMAN LYNN	Walnut 3040
San Francisco	EDWIN HAVERTY	Yukon 6-5151
Seattle	R. C. HILL	Melrose 1895
Cincinnati	JACK DUDLEY	Beechmont 7598
Toronto	F. S. TOBIN	Empire 4-9655
Birmingham, Eng.	J. A. HORTON	
Paris, France	LEON JAUDOIN-PROM	
Liege, Belgium	M. JACQUES FOULON	
Dusseldorf, Germany	DR. HERBERT GROSS	

BUSINESS STAFF

Business Manager	J. W. ZUBER
Promotion Manager	S. F. MARINO
Circulation Manager	G. R. EBERSOLE
Research Manager	N. R. LADABOUCHE
Market Statistics	G. J. AUNER
Advertising Manager	C. H. BAILEY
Production Manager	A. V. ANDERSON
Classified Advertising Mgr.	DORIS ROBBINS
Mail & List Service	AMY LOMBARDO
Reprints	C. B. NILES

Advertising Representatives

New York 17 60 East 42nd St.
K. A. ZOLLNER, GUY LABAW
Murray Hill 2-2581

Farmington, Conn. 12 Farmstead Lane
CALVIN FISHER, JR.
Farmington 7-1756

Pittsburgh 19 2837 Koppers Bldg.
J. C. SULLIVAN
Atlantic 1-3211

Cleveland 13 Penton Building
D. C. KIEFER, H. G. ROWLAND
FRED J. ZINDLER
Main 1-8260

Cincinnati 30 5568 Beechmont Ave.
E. L. FRANKE—Parkway 3640

Detroit 27 14583 Longacre Rd.
C. A. TALLINGER JR.—Vermont 8-7207

Chicago 11 520 North Michigan Ave.
L. C. PELOTT, W. L. POLAND
JOHN W. VAUGHAN
Whitehall 4-1234

Los Angeles 48 6262 Commodore Sloat Dr.
F. J. FULLER—Webster 1-6865

Griffin, Georgia 331 South 12th St.
FRED J. ALLEN—Griffin 7854

Circulation Representatives

H. R. DUNNE, C. A. PRICE

CCA

Published Every Monday by

THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, Ohio

President and Treasurer	G. O. HAYS
Chairman	E. L. SHANER
Vice Pres., Director of Advertising	R. C. JAENKE
Vice Pres. and Secretary	F. G. STEINEBACH
Asst. Secy. and Asst. Treas.	J. P. LIPKA

Also Publisher of FOUNDRY, MACHINE DESIGN, NEW EQUIPMENT DIGEST

NBP

Member of Controlled Circulation Audit, Inc., Society of Business Magazine Editors, and National Business Publications, Inc.

New facts for your file on

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

TRANS-FLO
GACX
41001

Stainless Steel is used in the compartments of this car—a new idea in bulk transportation of dry, granular materials. The hopper car was built by General American Transportation Corporation, Chicago.

GATX makes good use of Stainless Steel in Trans-Flo car

● Here's an entirely new idea in bulk transportation of dry, granular materials made possible by the use of Stainless Steel. It's a covered hopper type of car, designed and built by General American Transportation Corporation, Chicago, Ill.

The car is divided into two large compartments, each with six hoppers. For some commodities the upper portion of each of the compartments is Stainless Steel. Whereas, for pharmaceuticals each compartment is fabricated of Stainless Steel.

By the use of Stainless Steel, the danger of rust from condensation in the air space above the lading is eliminated. And because Stainless is so easy to clean and keep clean, it helps to guard the commodity against any possible contamination.

The exterior of this fruit and vegetable store display is long-lasting, corrosion-resisting Stainless Steel. The unit is manufactured by The Super-Cold Corporation, Los Angeles.

"Cold moist" vegetable display unit is built to last with Stainless Steel

The Super-Cold Corporation, Los Angeles, Calif., is relying on Stainless Steel to add both good looks and long life to its "Salesboy" fruit and vegetable store display.

This unit features the addition of cold moisture to the refrigeration unit to combat the effects of warm temperature and dry air. This maintenance of moisture content virtually eliminates sorting and trimming, as well as a large percentage of shrinkage loss.

The entire exterior of the unit is Stainless Steel, a material that will maintain attractive appearance for years even when exposed to a damp, moist atmosphere.

Take advantage of Stainless Steel in your designs and in your selling

Here are more applications typical of the thousands in which Stainless Steel has been used to improve design and add sales appeal. The wide range of valuable properties available in Stainless Steel makes it the ideal material for many, many jobs.

Put Stainless to work for you. It will pay its own way and give you a good return on your investment—especially when it is perfected, service-tested U·S·S Stainless Steel.

USS

UNITED STATES STEEL CORPORATION, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

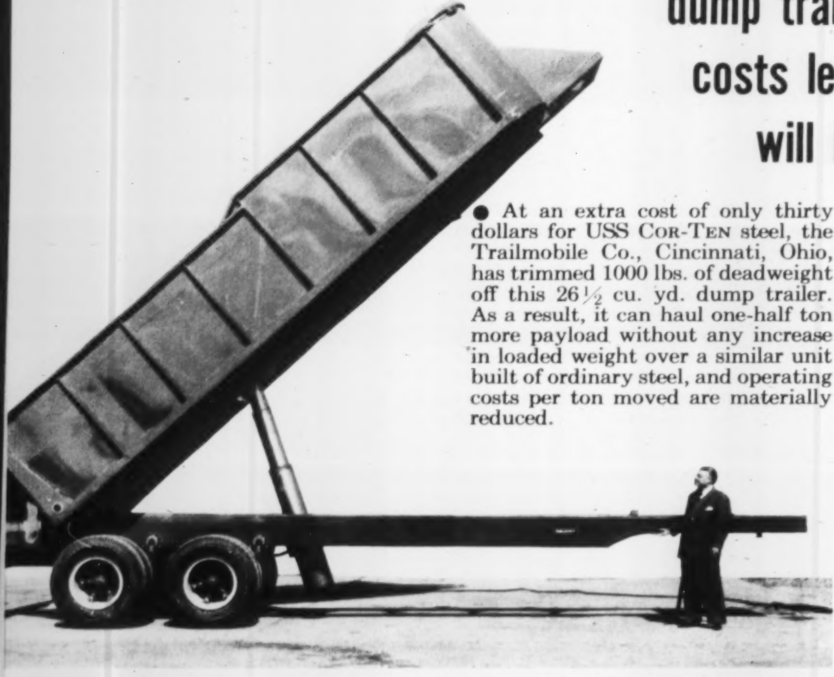
UNITED STATES STEEL

New facts for your file on

U·S·S HIGH STRENGTH STEELS

Built 1000 lbs. lighter with USS COR-TEN steel

dump trailer hauls more, costs less to operate, will last longer



● At an extra cost of only thirty dollars for USS Cor-Ten steel, the Trailmobile Co., Cincinnati, Ohio, has trimmed 1000 lbs. of deadweight off this 26½ cu. yd. dump trailer. As a result, it can haul one-half ton more payload without any increase in loaded weight over a similar unit built of ordinary steel, and operating costs per ton moved are materially reduced.

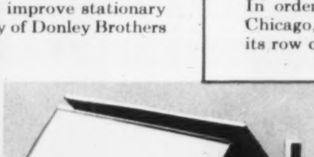
But USS Cor-Ten steel does more than save weight and lower operating costs. Its high yield point of 50,000 psi—one and a half times that of carbon steel—gives the trailer body exceptional strength and toughness. Its much higher resistance to atmospheric corrosion, its superior resistance to abrasion, impact and wear greatly increase durability, keep the trailer on the job and help to prolong its life.

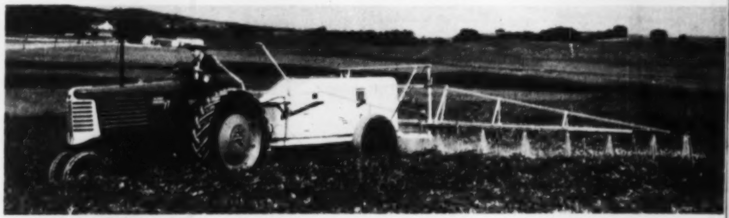
Since its introduction twenty years ago, USS Cor-Ten steel has been used by 27 leading builders of trucks and trailers—names famous in the commercial car industry—to produce equipment that is lighter, more durable, able to do more work and cheaper to operate and maintain. For the complete story of USS Cor-Ten and other USS High Strength Steels, write our nearest office.

In fireplace damper, USS COR-TEN steel gives corrosion resistance, adds durability . . . and cuts costs

Designers who usually think of USS Cor-Ten steel in connection with mobile equipment—such as trucks and trailers, buses, earth movers and similar equipment, where its ability to reduce weight and increase durability are a matter of record—are sometimes surprised at the effective way this high strength steel's properties are put to use in applications like this.

Here in a fireplace damper, USS Cor-Ten steel shows how advantageously it can be used to improve stationary equipment as well. Says Fred W. Donley of Donley Brothers Company, Cleveland, Ohio, the manufacturer, "As to the reasons for using Cor-Ten steel instead of ordinary carbon steel, we desired a material similar to cast iron in resistance to corrosion under coal smoke conditions. The Cor-Ten steel damper began as a substitute for cast iron during the war, but has earned a place of its own because of its sturdy construction and a price that is less than cast iron in the respective sizes."





USS COR-TEN steel improves farm sprayer performance by reducing corrosion difficulties

In order to reduce troubles due to corrosion, the Oliver Corporation, Chicago, Illinois, has standardized on the use of USS Cor-Ten steel for its row crop sprayer.

By building sprayer tanks of USS Cor-Ten steel the manufacturer claims to have obtained these very worthwhile advantages: (1) Cor-Ten steel tanks corrode far less rapidly than carbon steel tanks. (2) The rust which comes off the Cor-Ten steel is very fine and does not clog the sprayer screens, whereas carbon steel rust comes off in flakes which plug the screens, causing delay because the equipment must be shut down to clean screens. (3) Users get a better product and are better satisfied. "As a result," says the Oliver Corporation, "we intend to make all of our sprayer tanks of Cor-Ten steel."

USS

UNITED STATES STEEL CORPORATION, PITTSBURGH · AMERICAN STEEL & WIRE DIVISION, CLEVELAND · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

New facts for your file on

U·S·S CARILLOY STEELS

Special non-magnetic U·S·S Carilloy steel anchors Navy's newest minesweeper

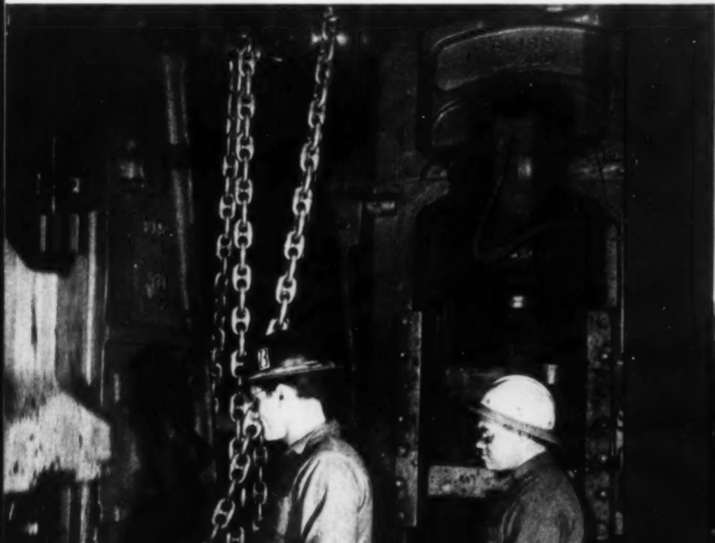
• The United States Navy has made minesweeping operations more effective with the help of U·S·S Carilloy steel.

During World War II, a new weapon in marine warfare was developed—the magnetic mine. These mines explode when an ordinary steel ship comes near. To sweep such mines safely, without premature or uncontrolled explosions, the Navy is building a fleet of radically new *non-magnetic* minesweepers.

Finding a suitable steel for the anchor chains on these ships was quite a problem. The chains scrape over hard rocks, sand, and coral along the ocean floor, so they must have good resistance to abrasion. In addition, they must withstand heavy tension, torsion, and impact stresses as wind and tide pound at the ship. To top it off, they must be non-magnetic.

The Navy satisfied *all* these tough requirements with Carilloy austenitic manganese steel. Intimate knowledge of steels and accurate, skillful control of each step in steel making enabled us to meet the unusual specifications.

Experience on extraordinary jobs like this helps us to do a better job on your steel, whether you need a standard AISI grade or a special analysis. When you need high-quality alloy steel, specify U·S·S Carilloy. And when you need expert metallurgical advice, get in touch with the nearest U·S·S District Sales Office.



NON-MAGNETIC ANCHOR chains are forged from U·S·S Carilloy austenitic manganese steel. They are cooled after forging.

LENGTH of this $3/4$" anchor chain is checked after proof test loading at Boston Naval Shipyard. Ductility is extremely important in these chains, and the U·S·S Carilloy steel provides elongation of 80%.

USS

UNITED STATES STEEL CORPORATION, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

The Brazing is Practically Free!

...when you combine it with salt bath carburizing or hardening

Any material that can be brazed at all can be brazed in an Ajax Electric Salt Bath Furnace—much faster, better and usually at lower cost. But that's only part of the story!

Where a steel assembly for brazing also requires carburizing or hardening, the entire job can be done in a single heating operation so that brazing is practically free. Note examples on this page.

The "secret" lies in brazing with brass during the carburizing operation. This money-saving method is possible only with a salt bath furnace, thanks to its greater heating speed—so fast that no dezincification of the brazing metal occurs. Moreover, the steel assembly is brazed and carburized below 1700° F. instead of at 2050° F. as required for copper brazing. Thus, distortion and grain growth are greatly reduced and furnace operating costs are less. Conclusive tests prove that brass-brazed joints are fully as strong as those of copper.

For straight brazing employing copper, silver or aluminum, the Ajax furnace offers from 4- to 6-times faster heating cycles. Amazingly accurate temperature control minimizes distortion. Selective heating is easy. Scaling or decarburization are avoided and floor space requirements are only a fraction of those required with any other production brazing system.

Write *for Ajax Bulletin #72 and Reprint #124*

Bring *production batches of your materials to the Ajax Metallurgical Service labs for on-the-job demonstrations of Ajax efficiency.*

AJAX ELECTRIC COMPANY, INC.
952 Frankford Ave. Philadelphia 23, Pa.

Associated companies: Ajax Electric Furnace Corp.; Ajax Electrothermic Corp.; Ajax Engineering Corp.

A 51% Saving!

Ajax combined carburizing and brass-brazing reduced rejects 50%, effected savings of 51% and improved the quality of this wrench jaw. Steel jaw insert is brazed in place and the entire assembly carburized in one heating at 1675° F. Brazed joints must pass a test of 40,000 psi.

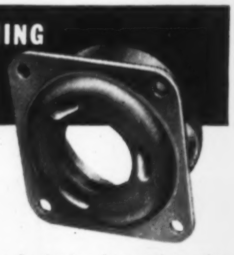
ONE HEATING DOES 2 Jobs!

Carburizing and brazing of this motor starter assembly are done simultaneously in a single Ajax salt bath with one heating of the work. A water quench completes the job. A conventional carburizing bath produces a case depth of .015" in 50 minutes.

QUALITY IMPROVED—Costs Cut!

The laminations of this SAE-1010 steel stapler bracket are securely brass-brazed at the same time the surface is being carburized. Wearing surfaces are file hard. Distortion is less than .005". The entire carburizing-brazing operation was done in 20 minutes.

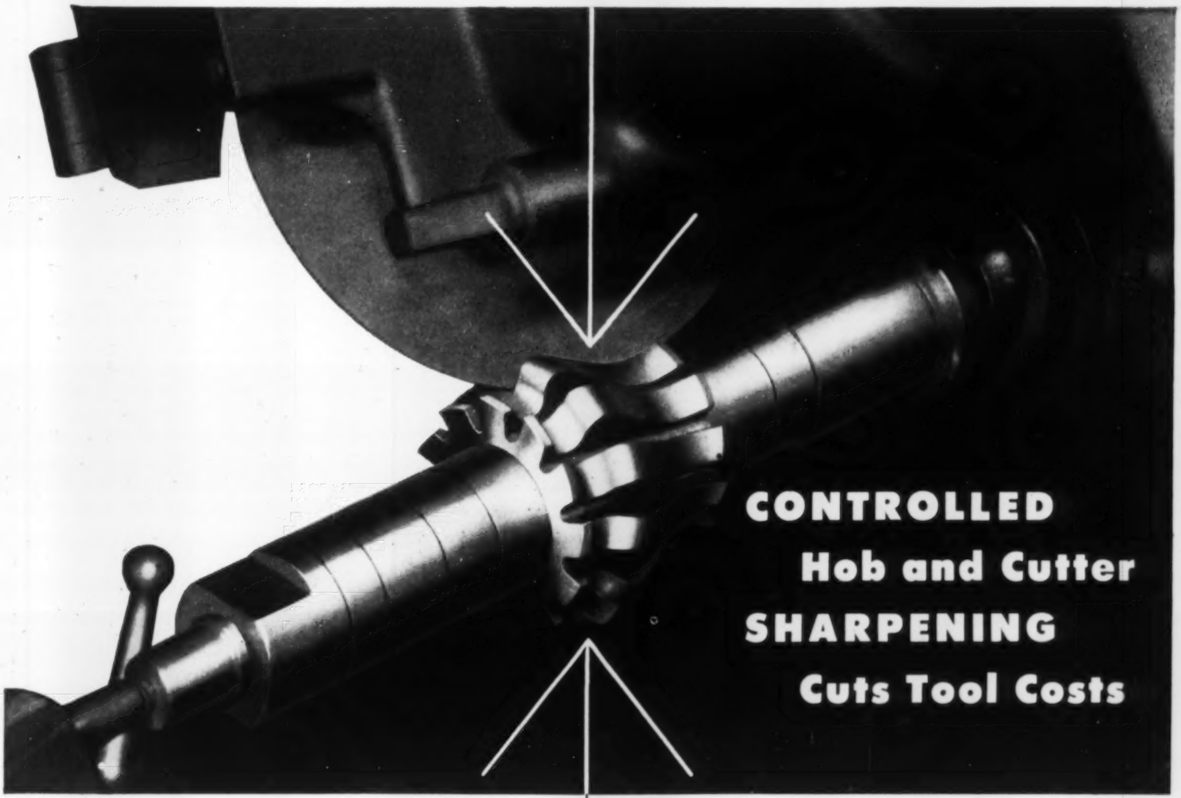
WARP-FREE HARDENING Plus BRAZING



Warpage on this magnetic lock part is negligible thanks to complete protection during hardening in a neutral salt bath. The flange is securely brass-brazed to the steel cup in the same operation. Brazing metal is confined neatly to the joint—does not spread over the parts.

AJAX HULTGREN Trademark **electric SALT BATH furnaces**

World's largest manufacturer of electric heat-treating furnaces exclusively



Barber-Colman Sharpening Machines offer a selection of production sharpening equipment for precision control of:

Tooth Spacing
True Radial or Rake Teeth
Straight or Helical Flutes
Carbide-Tooth Sharpening

Assure maximum tool performance and maintenance of original tool accuracy by sharpening hobs and form-relieved cutters on Barber-Colman Automatic Sharpening Machines.

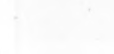
Tools sharpened to the established tolerances last longer and cut better.

Ask your Barber-Colman representative for complete information or write direct listing the range of your sharpening requirements.

No. 6-5

No. 4-4

No. 10-12


No. HRS

BARBER COLMAN ®

Barber-Colman Company

GENERAL OFFICES AND PLANT, 662 ROCK STREET, ROCKFORD, ILLINOIS

Carrying hot steel for THREE YEARS

and these Hard-Faced rollers are still in use

Three years ago, some cast iron cone rollers for this cooling bed were hard-faced with HAYNES alloy No. 92. Today, they are still carrying hot steel bars despite the continual impact, abrasion, and heat to which they have been subjected. Cast steel rollers on the same line, which were hard-faced with HAYNES STELLITE alloy No. 6, have also shown exceptional service — although they have not yet been in use as long as the cast iron ones.

HAYNES alloy No. 92, an iron-base alloy recommended for the cast iron parts, is exceptionally easy to apply by oxy-acetylene welding. It has a very low melting point and the molten alloy is quite fluid. Deposits have a Rockwell C hardness of 62-67 and excellent wear resistance.

HAYNES STELLITE alloy No. 6, the cobalt-base alloy used for hard-facing the cast steel parts, can be applied by metallic arc welding. Deposits are machinable and have excellent resistance to abrasion and heat.

For information on how to hard-face cast iron and cast steel parts, and on the alloys recommended for each job, write for a copy of "HAYNES Hard-Facing Manual."

HAYNES
TRADE-MARK
Alloys

Haynes Stellite Company
A Division of
Union Carbide and Carbon Corporation
UCC
General Offices and Works, Kokomo, Indiana
Sales Offices
Chicago — Cleveland — Detroit — Houston
Los Angeles — New York — San Francisco — Tulsa

"Haynes" and "Haynes Stellite" are trade-marks of Union Carbide and Carbon Corporation.

shearing **30 sizes in 6 gauges**

accurately...

on CINCINNATI SHEARS

Photo courtesy of St. Charles Manufacturing Co.

Shearing 400 items of kitchen and hospital equipment from 10 to 24 gauge sheets, on two nine-hour shifts six days a week, 4 Cincinnati Shears equipped with the Cincinnati Magnetic Sheet Support are highly productive machines in the St. Charles Manufacturing Company shops.

The Cincinnati Magnetic Sheet Support eliminates sag in thin sheets, permits quick, positive gauging, and increases the production of accurate blanks.

Write for Shear catalog S-6.

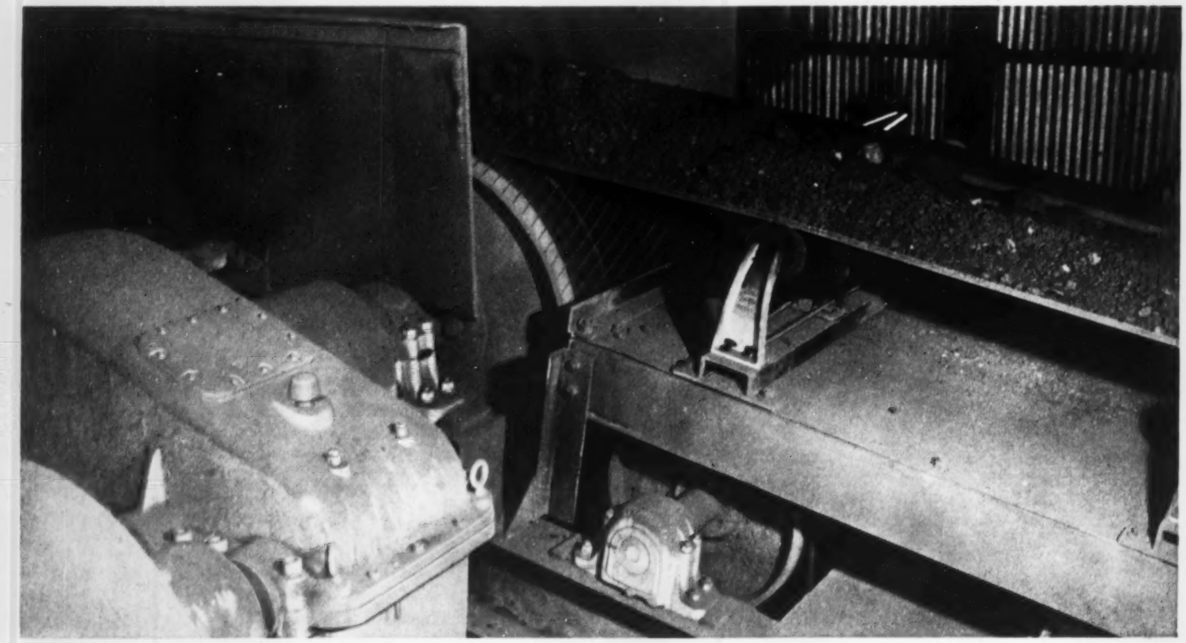
CINCINNATI

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

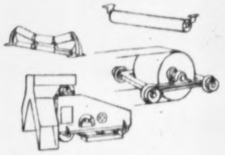
BEAT HIGH TRANSPORTATION COSTS--

carry the load via belt conveyors



Engineered for long-life in ore handling, this Link-Belt 48-inch wide, inclined belt conveyor consists of Series 200 troughing idlers, welded steel pulleys (both plain and rubber lagged), roller bearings and an enclosed gear drive.

LINK-BELT offers you the "total engineering" so necessary for top efficiency



DESIGNED FOR OVERALL EFFICIENCY

Because of its unrivalled experience, Link-Belt can do a better job of gathering and analyzing all data. Proposals reflect this understanding of the most practical way to fit conveyors into your system requirements.

BUILT FOR LONG-LIFE PERFORMANCE

Link-Belt manufactures all components and related feeders and conveyors. You are assured of the right equipment because of this breadth of line. And Link-Belt will supply the highest grade belts engineered to the job.

DELIVERS FULL RATED CAPACITY

Link-Belt follows through on every detail of the job, including electrical controls and even wiring and foundations. What's more, Link-Belt will furnish experienced erection superintendents, staffs and skilled crews.

ASSURES SATISFACTORY PERFORMANCE

When you rely on Link-Belt as a single source for your complete system, Link-Belt accepts responsibility for placing it in full operating readiness. We will also supervise modernization of existing systems.

Next time you're in the market for one belt conveyor or a complete system, call a conveying expert in the Link-Belt office near you. It's his job to help you get the best in belt conveying at the lowest possible overall cost.

LINK-BELT

BELT CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

13,330

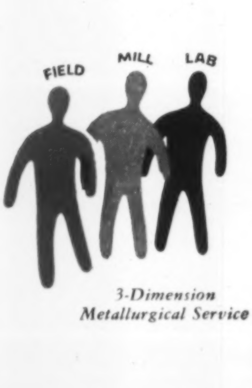
ALLOY STEEL PROBLEMS SHOULD BE VIEWED FROM 3 Angles

And that's just what Republic's 3-D Metallurgical Field Service does.

The Republic Field Metallurgist gets the first look at your problem, right in your plant. He talks to your plant and engineering staff, studies your product, examines your production methods. His report goes back to the Republic Mill and Laboratory Metallurgists.

Then these three men discuss the report. They pool their combined knowledge of alloy steels, forging, machining and heat-treating, and check it against your problem. Their final recommendation is tailored to your plant, within your cost limits, to give you the quality your product requires at the speed you need to show a profit.

Are you sure you're getting all the advantages you should from your alloy steels? If you're not, it may pay you to call in Republic's 3-D Metallurgical Service. It's available, at no charge, through your local Republic Steel Sales Office.



3-Dimension Metallurgical Service

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Dept.: Chrysler Bldg., New York 17, N.Y.

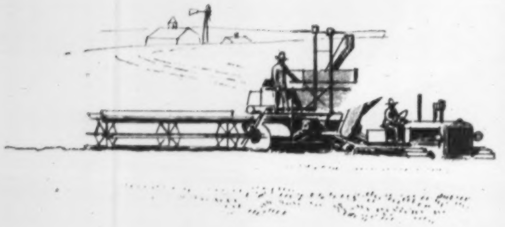
REPUBLIC STEEL

Republic ALLOY STEELS

Other Republic Products include Carbon and Stainless Steels—Sheets, Strip, Plates, Pipe, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

The same steady purr-r-r-r

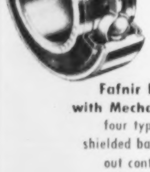
in huge farm machines



The way those early outboard motors would buck and die on you, or refuse to start at all, was enough to take the joy out of fishing. Today's "outboard", equipped with Fafnir Ball Bearings, purrs smoothly, quietly, and dependably—mile after sporting mile.

For the same reason, modern farm machinery — self-propelled combines, field harvesters, corn pickers, and the like — operates more efficiently, and requires a minimum of service time. With Fafnir Ball Bearings, any machine becomes a *precision* machine. It runs smoother, longer, without attention or breakdown. It's more productive.

Call it Fafnir's attitude and aptitude for solving bearing problems. It's a way Fafnir has of looking at bearings from the user's point of view . . . an ability to come up with the right bearing for the need. For Fafnir's experience is more than 40 years long — and industry-wide. The Fafnir Bearing Company, New Britain, Conn.



Fafnir Ball Bearing with Mechani-Seals, one of four types of sealed and shielded ball bearings designed to keep out contaminants, keep in lubricants. They often lead to lower manufacturing costs and simplified assemblies.

FAFNIR

BALL BEARINGS

MOST COMPLETE LINE IN AMERICA

MORE than top quality in ball bearings . . . it's what Fafnir has ON THE BALL

CALENDAR
OF MEETINGS

February 15, American Society of Civil Engineers: Winter meeting, Hotel Biltmore, Atlanta. Society address: 33 W. 39th St., New York. Executive secretary: Col. William N. Carey.

February 15-17, American Management Association: Personnel conference, Palmer House, Chicago. Association address: 330 W. 42nd St., New York. Vice president-secretary: James O. Rice.

February 15-17, Association of Iron & Steel Engineers: West coast meeting, Hotel Statler, Los Angeles. Association address: 1010 Empire Bldg., Pittsburgh 22. Managing director: T. J. Ess.

February 15-17, National Welding Supply Association: Annual meeting, Fairmont hotel, San Francisco. Association address: 1900 Arch St., Philadelphia 3. Secretary: Robert C. Fernley.

February 15-18, American Institute of Mining & Metallurgical Engineers: Annual meeting, Hotels Statler and McAlpin, New York. Institute address: 29 W. 39th St., New York. Secretary: E. H. Robie.

February 16-18, Purchasing Agents Association of Chicago: Annual products show, Hotel Sherman, Chicago. Association address: 134 N. LaSalle St., Chicago 2. Information: C. A. Peterman, chairman publicity committee.

February 19-20, Machinery & Allied Products Institute: Third session, seventh conference on capital goods economics, Statler hotel, Washington. Information: Secretary, Charles W. Stewart, 1200 18th St., NW, Washington 6.

February 22-25, Annual Industrial Ventilation Conference: Kellogg Center, Michigan State College, East Lansing, Mich. Information: Continuing Education Service, Michigan State College, East Lansing, Mich.

March 1-5, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy and Exposition of Modern Laboratory Equipment: Hotel William Penn, Pittsburgh. Information: L. D. Frederickson Jr., P. O. Box 772, New Kensington, Pa.

March 3, Steel Kitchen Cabinet Manufacturers Association: Spring meeting, New York. Association address: Engineers Bldg., Cleveland 14. Executive secretary: Arthur J. Tuscany Jr.

March 3-4, American Machine Tool Distributors Association: Spring meeting, Boca Raton hotel and club, Boca Raton, Fla. Association address: 1900 Arch St., Philadelphia 3. Executive secretary: Thomas A. Fernley Jr.

March 4-5, American Society for Metals: Midwinter meeting, Hotel Statler, Boston. Society address: 7301 Euclid Ave., Cleveland. Secretary: W. H. Eisenman.

March 8-12, National Electrical Manufacturers Association: Mid-winter meeting, Edgewater Beach hotel, Chicago. Association address: 155 E. 44th St., New York 17. Managing director: W. J. Donald.

March 9-12, American Management Association: General management conference, Fairmont hotel, San Francisco. Association address: 330 W. 42nd St., New York 36. Vice president-secretary: James O. Rice.

March 10-12, Society of the Plastics Industry Inc.: Pacific coast section conference, Hotel Del Coronado, Coronado, Calif. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

March 10-12, American Society of Mechanical Engineers: International meeting, Mexico City, D. F. Society address: 29 W. 39th St., New York. Secretary: C. E. Davies.

March 15-17, National Association of Waste Material Dealers Inc.: Annual meeting, Hotel Waldorf-Astoria, New York. Association address: 271 Madison Ave., New York 16. Managing director: Clinton M. White.

March 15-19, National Association of Corrosion Engineers: Annual conference and exhibit, Municipal Auditorium, Kansas City, Mo. Association address: 1061 M & M Bldg., Houston 2. Executive secretary: A. B. Campbell.

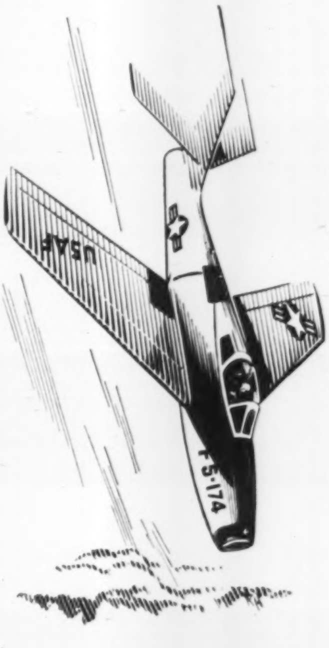
March 17-19, Pressed Metal Institute: Spring technical meeting, Hotel Carter, Cleveland. Institute address: 2860 E. 130th St., Cleveland. Managing director: O. B. Werntz.

THUNDERSTREAK
-166

Where nothing but the BEST will do . . .
IT'S
WALLINGFORD
Steel Tubing

THE REPUBLIC F-84F THUNDERSTREAK

A mainstay in the defense of the free world, this new fighter-bomber exceeds in all performance categories any previous Air Force fighter or fighter-bomber type.



The catapult seat for this hot, new fighter-bomber had to combine light weight with rugged strength to resist shock and protect the pilot. Only the finest construction would do . . . there could be no compromise with dependability or quality. That's why Wallingford Steel Tubing was selected for the frame.

Like the Republic Aviation Corporation, many other satisfied tubing customers have learned that there's no source like Wallingford when it comes to meeting the most exacting specifications ***exactly*** and ***consistently***.

Whether your problem concerns strength, analysis, concentricity, diameter or uniform wall thickness, Wallingford has the experience, skill and modern equipment and productive capacity needed to deliver tubing just right for your requirements. Phone us today and let us know what you need.

WELDED ORNAMENTAL, MECHANICAL, PRESSURE AND SANITARY TUBING and PIPE IN STAINLESS and CARBON

THE
WALLINGFORD
SINCE 1922
STEEL
CO.
WALLINGFORD, CONNECTICUT, U. S. A.

LOW CARBON • HIGH CARBON • ALLOY • STAINLESS • STRIP and TUBING

. . oil quenching of cavity mold

LINDBERG STEEL TREATING HELPS MAKE BETTER TELEVISION CABINETS

Plants in

MELROSE PARK, ILL.
(Chicago)
1975 North Ruby
FIllmore 4-4080

ROCHESTER
620 Buffalo Rd.
GEnessee 5212

ST. LOUIS
650 E. Taylor
Fireside 6200

LOS ANGELES
2910 So. Sunol Drive
ANgelus 9-7311

On Chicago's west side, one of the largest sets of plastic molds in the world is producing 21" Motorola television cabinets at a rate of more than one every five minutes.

These molds, designed by Chicago Molded Products Company in cooperation with Motorola, and heat treated by Lindberg Steel Treating Company, weigh more than five tons . . outside dimensions are 40" x 43" x 36" . . and they're worth $75,000 a pair!

The production of such a set of molds is a perfect example of team-work by American industry. Crucible Steel Company poured the ingots, and pressed them into huge blocks each weighing 13,900 pounds. The R. O. Schulz plant in Elmwood Park, Illinois, did the machining and polishing.

Next, came the heat treating . . the finished molds had to be treated to precisely the right hardness . . for they had to withstand the washing of plastic materials . . and they had to be tough enough to stand up under the terrific pressure of the 1500 ton compression molding press.

At this point Lindberg metallurgists and heat treaters went into action. There could be no trial runs . . no mistakes, or $75,000 worth of molds quickly could become $600 worth of scrap metal.

Heat treating specialists selected the proper furnace, specified the correct heating temperature, the necessary time at heat, the right procedure for quenching. "Operation Motorola" went off without the slightest hitch. Within hours after tempering, the molds received final surface polishing . . in a matter of days they were forming cabinets for Motorola TV sets.

Lindberg Steel Treating Co., and its large staff of metallurgists and heat treaters are available to consult on *your* heat treating requirements . . whether your problem is simple or "almost impossible."

A case history of Lindberg Steel Treating Co. service to American industry

LINDBERG STEEL TREATING CO.

1973 North Ruby Street, Melrose Park (Chicago), Illinois Phone: FIllmore 4-4080

WHAT YOU DO RIGHT NOW IS MIGHTY IMPORTANT

That moment when he hits . . . if you don't set the hook hard and firm, you'll never see him in the boat. And *this* moment in business . . . now's the time to give yourself the competitive edge you're going to need, perhaps sooner than you think. ● Allegheny Metal can reduce costs, add strength, increase service life, improve appearance, cut weight, overcome rust. How many of those properties of stainless steel can you use to advantage, and how can we help you to do so? *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pennsylvania.*

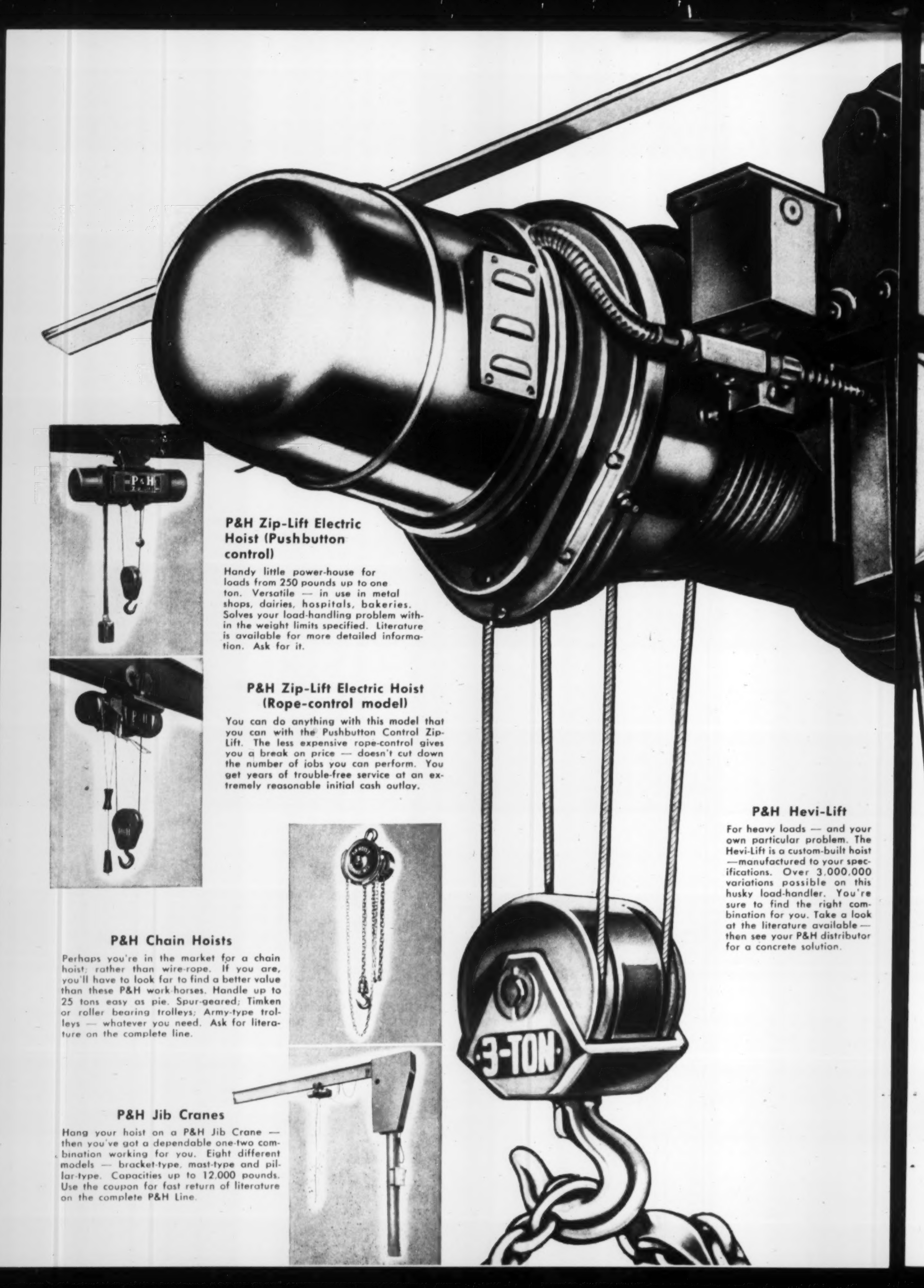
You can make it **BETTER** with

Allegheny Metal

AL ®
TIME-TESTED STAINLESS STEEL

WBG 47198

Warehouse stocks carried by all Ryerson plants



P&H Zip-Lift Electric Hoist (Pushbutton control)

Handy little power-house for loads from 250 pounds up to one ton. Versatile — in use in metal shops, dairies, hospitals, bakeries. Solves your load-handling problem within the weight limits specified. Literature is available for more detailed information. Ask for it.

P&H Zip-Lift Electric Hoist (Rope-control model)

You can do anything with this model that you can with the Pushbutton Control Zip-Lift. The less expensive rope-control gives you a break on price — doesn't cut down the number of jobs you can perform. You get years of trouble-free service at an extremely reasonable initial cash outlay.

P&H Chain Hoists

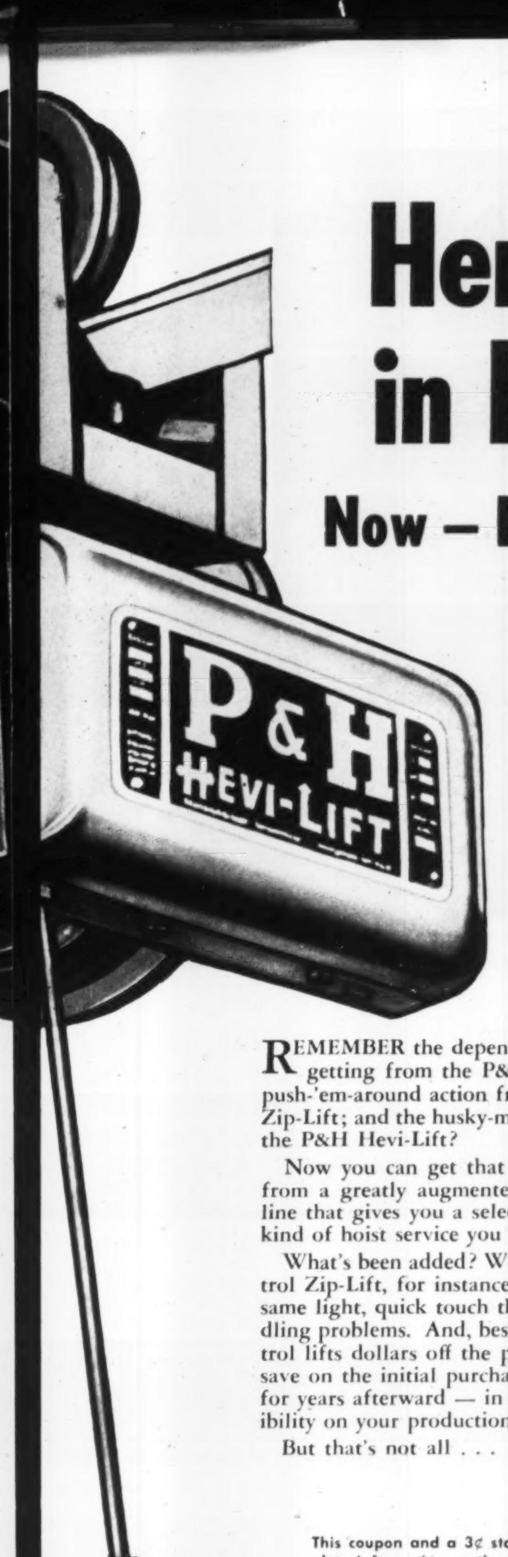
Perhaps you're in the market for a chain hoist; rather than wire-rope. If you are, you'll have to look far to find a better value than these P&H work-horses. Handle up to 25 tons easy as pie. Spur-geared; Timken or roller bearing trolleys; Army-type trolleys — whatever you need. Ask for literature on the complete line.

P&H Jib Cranes

Hang your hoist on a P&H Jib Crane — then you've got a dependable one-two combination working for you. Eight different models — bracket-type, mast-type and pillar-type. Capacities up to 12,000 pounds. Use the coupon for fast return of literature on the complete P&H Line.

P&H Hevi-Lift

For heavy loads — and your own particular problem. The Hevi-Lift is a custom-built hoist — manufactured to your specifications. Over 3,000,000 variations possible on this husky load-handler. You're sure to find the right combination for you. Take a look at the literature available — then see your P&H distributor for a concrete solution.



Here's the big news in hoists for 1954

Now — Look what you get from P&H

1. *A greatly augmented product line — complete selection for your needs*
2. *Mechanical superiority that lets you work with confidence and profit*
3. *25% overload safety factor on every P&H Hoist you use*

REMEMBER the dependable service you've been getting from the P&H standbys? The quick, push-'em-around action from the P&H Pushbutton Zip-Lift; and the husky-muscle load-handling from the P&H Hevi-Lift?

Now you can get that same dependable service from a greatly augmented P&H Hoist Line — a line that gives you a selection of practically every kind of hoist service you need.

What's been added? Well, there's the Rope Control Zip-Lift, for instance. Same maneuverability; same light, quick touch that solves your load-handling problems. And, best of all — the Rope Control lifts dollars off the price of this model. You save on the initial purchase price — and you save for years afterward — in increased speed and flexibility on your production line.

But that's not all . . .

Next there's the new P&H Line of Chain Hoists. For spots where the work problem demands a chain hoist — you get a complete selection from P&H. All kinds available — spur-geared; army-type trolley; low-headroom trolley — and in capacities up to 25 tons.

Need a jib crane? P&H supplies them too. Eight different models — bracket-type, mast-type and pillar-type. Reaches from 8 to 20 feet — capacities up to 12,000 pounds.

Yes, P&H gives you *complete* coverage in your hoist service. Every new model built with the painstaking care and meticulous attention to detail you've come to expect from P&H.

Each hoist is guaranteed to withstand an occasional overload of 25% more than its rated capacity. Take a look at the illustrated line and use the coupon below — today.

This coupon and a 3¢ stamp gets you complete information on the P&H Hoist Line.

P&H HOISTS
HARNISCHFEGER
CORPORATION
4411 W. National Ave. • Milwaukee 46, Wis.

TEAR OUT COUPON AND MAIL TODAY!

P&H Hoists
HARNISCHFEGER CORPORATION
4411 West National Avenue, Milwaukee 46, Wisconsin

I'd like to know more about the P&H complete line. I'm particularly interested in — Pushbutton Zip-Lift ☐; Rope-Control Zip-Lift ☐; Hevi-Lift ☐; Chain Hoists ☐; Jib Cranes ☐. Send the dope to:

Name.. Title..............................

Company..

Address..

City.. Zone........ State..............

Giants for hire

CLEARING CO

The **JARECKI** "Giants for Hire" include Clearing, Danly, Bliss, Cleveland, Hamilton, Verson, and Niagara presses ranging from 25 to 1200 ton capacity. These presses are capable of producing the largest and the smallest parts used in the automotive and appliance industries.

These giants also contribute to the **JARECKI** reputation for making dies. Each die is tested on these presses before delivery to the customer.

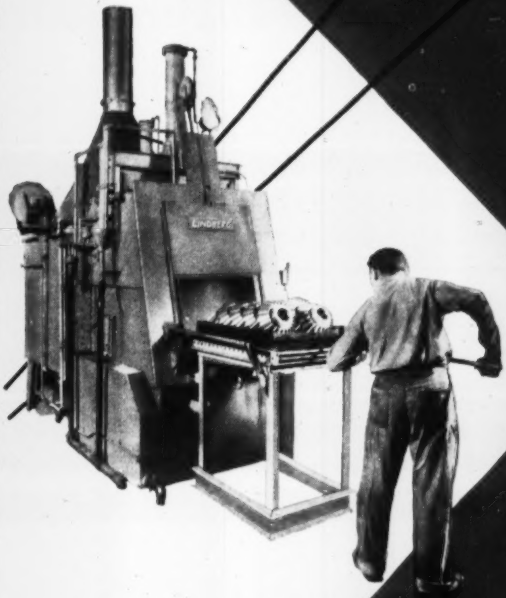
Expanding facilities soon will make it possible for **JARECKI** "Giants" to serve new customers. A facilities booklet will be sent upon request.

JARECKI

engineering • tools • dies • stamping • assemblies • plating • painting

GRAND RAPIDS, MICHIGAN

JARECKI MACHINE AND TOOL CO.



5 FURNACES IN ONE

the *LINDBERG* Carbonitriding Furnace

Yes, it's many furnaces in one! It's designed not only for carbonitriding . . but also for hardening, carburizing and carbon restoration. It's self contained . . it's easy to maintain!

10 reasons why Lindberg Carbonitriding Furnaces are better:

1. Heating is by new type, gas-fired, vertical radiant tubes. They weigh only 29 pounds each . . can be changed in two minutes. Just lift out the old one, and lower the new one in its place.
2. Vertical radiant tubes last longer . . often two or three times as long.
3. Quench tank is built-in . . no costly excavation or piping necessary. Distortion is minimized because quenching takes place within furnace structure, and heated work is never exposed to outside air.
4. Quench tank has fin type oil cooler . . maintains oil at proper temperature for quenching.
5. Specially designed purge chamber purges work loads before they enter heating chamber.
6. Special check-light system tells you where charge is at any given time.
7. Control of heating and quenching cycle is automatic. Uniform case depth is assured because each charge remains at heat same length of time.
8. Depending on your production requirements, Lindberg Carbonitriding Furnaces are made for automatic, semi-automatic, or manual charging.
9. You're not experimenting with Lindberg Carbonitriding Furnaces. They've been tested . . under three years of rough operating conditions.
10. The famous Lindberg "Hyen" generators which supply atmosphere for Lindberg Carbonitriding Furnaces are instantly adjustable for many different types of atmospheres.

For full details, ask for bulletin 1241.

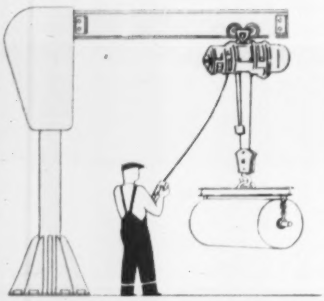
LINDBERG FURNACES

Lindberg Engineering Company • 2441 West Hubbard Street • Chicago 21, Illinois

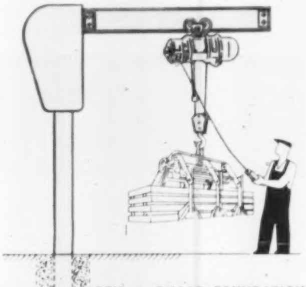
Industrial JIB CRANES

Industrial Jib Cranes are designed and built to the same high standard set for Industrial Overhead Traveling Cranes. The smooth performance and unfailing service of these quality Jib Cranes has made them favorites throughout industry. Consult Industrial Crane & Hoist Corporation for better equipment to solve your materials handling problems.

The Industrial PBM and the PFM Heavy Duty Jib Cranes are the same except for the construction of the base. Self-supporting and designed to revolve in a complete circle these Jibs can be economically used in a myriad of applications. The 4 roller, 9 bearing head is designed for heavy duty applications and both models are available in capacities up to 12,000 #.

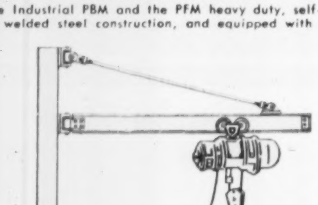


PBM • PILLAR BASE MOUNTED TYPE

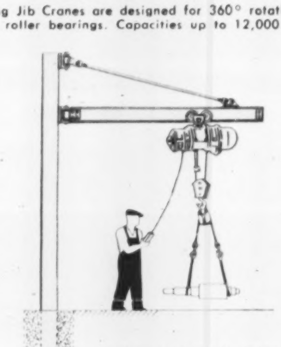


PFM • PILLAR FOUNDATION MOUNTED TYPE

The Industrial PBM and the PFM heavy duty, self-supporting Jib Cranes are designed for 360° rotation, are of welded steel construction, and equipped with ball and roller bearings. Capacities up to 12,000 #.

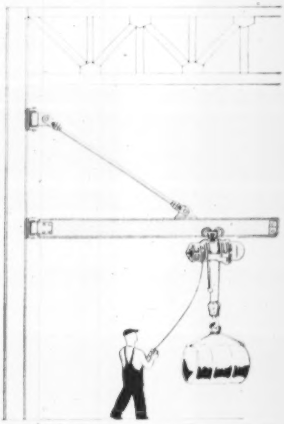


BPB • BRACKET PILLAR BASE MOUNTED TYPE



BPF • BRACKET PILLAR FOUNDATION MOUNTED TYPE

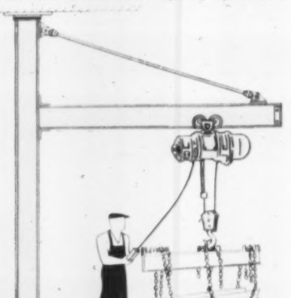
The Industrial BPB and the BPF self-supporting Jib Cranes are designed for 180° rotation. Equipped with annealed cast steel hinge fittings, heavy duty bronze bearings and double tie rods. Capacity up to 6000 #.



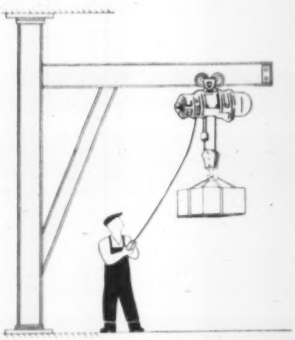
WBT • Industrial Wall Bracket Type Jib Crane for mounting on a steel column or factory wall. Available in capacities up to 6000 #.

WRITE FOR CATALOGS

Industrial
Industrial CRANES
JIB CRANES
GANTRY CRANES



MTD • Industrial Mast Type Jib Cranes designed to rotate 360°. Equipped with heavy duty top and bottom bearings. Capacities up to 12,000 #.



MTC • Industrial Mast Type Compression Brace Jib Crane, designed to rotate 360°, equipped with heavy duty top and bottom bearings. This Jib is designed for high lift in capacities up to 12,000 #.

Industrial CRANES

INDUSTRIAL CRANE & HOIST CORPORATION

(formerly Industrial Equipment Co.)

303 NORTH ADA STREET
CHICAGO 7, ILLINOIS

Overhead Cranes • Jib Cranes • Monorail Systems • Crane Runways
Representatives in Principal Cities

3 times the descaling capacity with only ½ the man power!

MADE POSSIBLE WITH THE MODERN

DU PONT SODIUM HYDRIDE DESCALING PROCESS

Descaling capacity up 300%—man-hours cut in half! That's the report from just one of the many steel mills that have replaced older descaling methods with the modern Du Pont Sodium Hydride Process.

Important savings and advantages like these are possible because of the high-speed effectiveness of the process. Just *one* fast treatment (10 to 20 minutes) is all it takes to completely descale most metals. Retreatments are rarely needed. Costly, scale-breaking operations used with older descaling methods are eliminated entirely!

With the modern Du Pont descaling process there's never any danger of etching or pitting—never a costly reject due to loss of gauge. Base metal is always protected since bath action stops the instant scale has been reduced. And the process is so easy to operate that any pickler can be trained to run it—within hours!

If you are descaling metals which are unaffected by fused caustic at 700°F., it will be to your advantage to talk with us about the Du Pont Sodium Hydride Process. Du Pont pioneered this modern descaling method and can bring a depth of technical experience to bear on your descaling problems. There's no cost for this service which includes expert aid in the construction, installation and operation of the process. Just call our nearest district office or send in the coupon below.

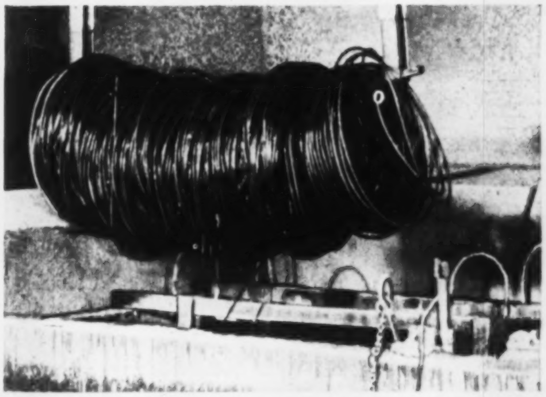
DISTRICT AND SALES OFFICES: Baltimore • Boston • Charlotte • Chicago Cincinnati • Cleveland • Detroit • Kansas City* • Los Angeles • New York Philadelphia • Pittsburgh • San Francisco.

*Barada & Page, Inc.

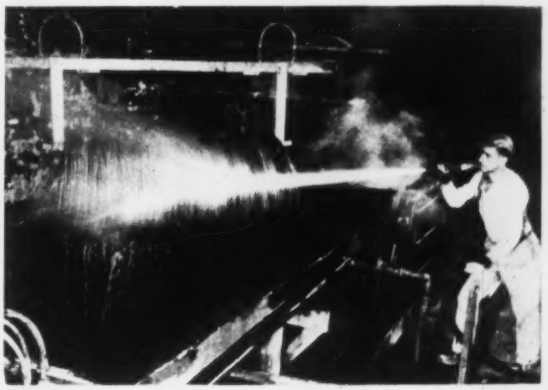
DU PONT
Sodium hydride process for positive descaling

DU PONT

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

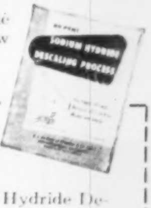


A YOKE of carbon steel wire is lifted from the hydride tank. Reduced scale is then blasted off with a water quench.



AFTER a high-pressure water rinse, the descaled wire is ready for brightening. Complete cycle takes less than 20 minutes.

Check coupon below for booklet describing the Du Pont Sodium Hydride Descaling Process—how it works—what it can do for you.



E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department **S-215**
Wilmington 98, Delaware

☐ Please send me your booklet on Sodium Hydride Descaling.

☐ Please have one of your technical men call. I am interested in descaling ________

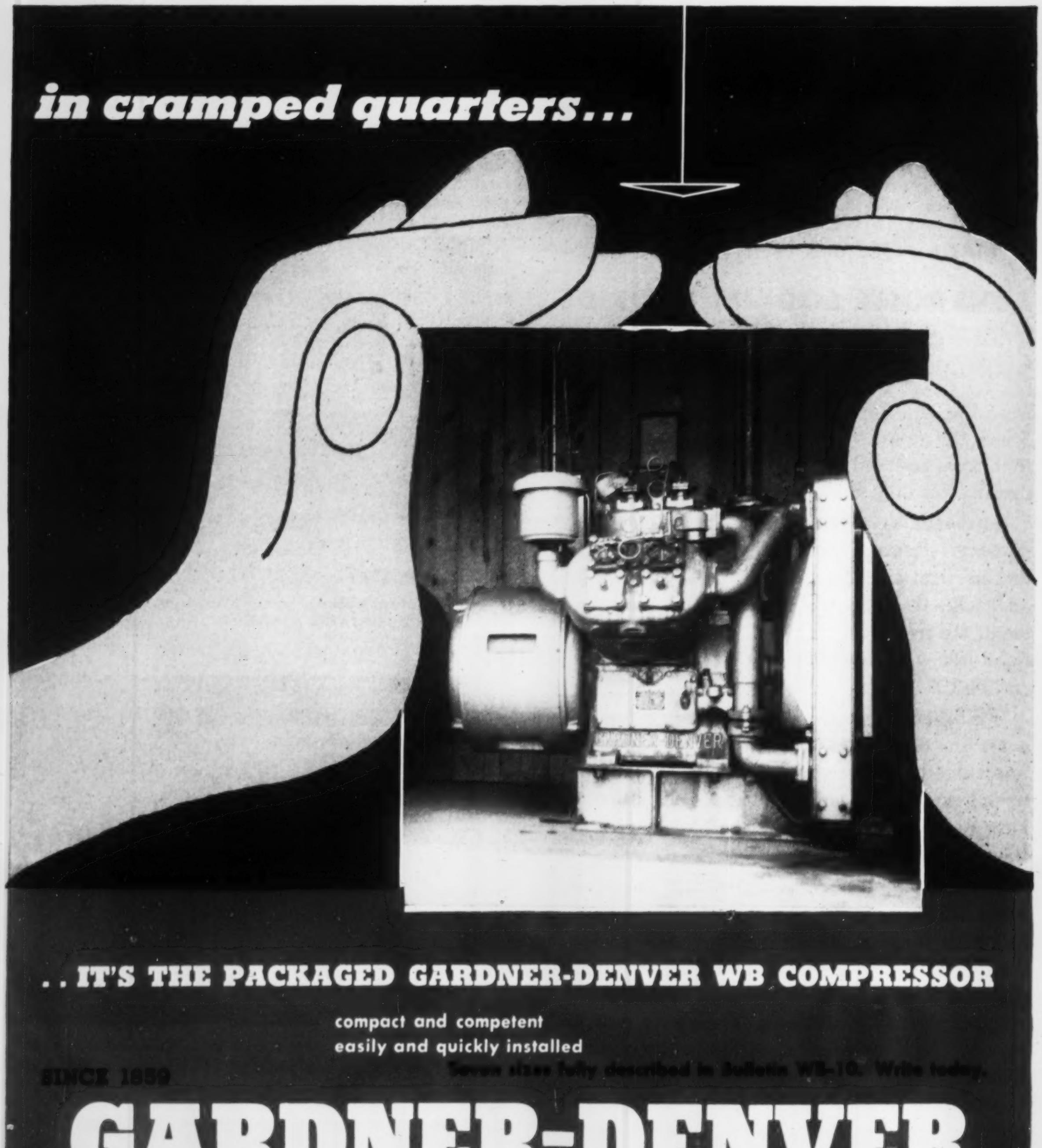
Name ________ *Position* ________

Firm ________

Address ________

City ________ *State* ________

in cramped quarters...



.. IT'S THE PACKAGED GARDNER-DENVER WB COMPRESSOR

compact and competent
easily and quickly installed

SINCE 1859

Seven sizes fully described in Bulletin WB-10. Write today.

GARDNER-DENVER

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS
FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois

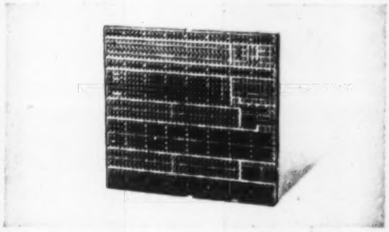
In Canada: Gardner-Denver Company (Canada), Ltd. 14 Curity Avenue, Toronto 13, Ontario

Make Sure You're Not Missing These Tooling Advantages!

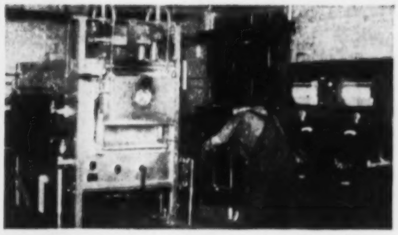
Make this *3-Minute Check* . . . Discover how a *modern* die steel can give you diemaking and production advantages no other steel offers you!

Are you aware of how tool and die steels have been improved in the last 5 to 10 years? New steels are now available that handle easier, run longer between grinds, bring down diemaking costs. Here are facts about *Vega* (Air-Tough) Die Steel—just one steel in Carpenter's Matched Set of 12 modern die steels. Compare *Vega* and what it offers, with the die steel you're using. Check it point by point. You'll see what a difference a Carpenter Matched Tool and Die Steel can mean to *your* production and profits. THE CARPENTER STEEL CO., 139 W. Bern St., Reading, Pa.

Here is what *Vega* gives you . . . *COMPARE* it with the die steel *you* use . . .

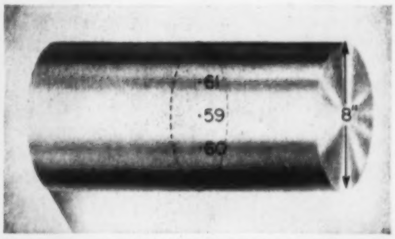


Freedom from Size Change in Hardening. The mold for this 9½" x 10½" plastic control panel has 1,280 5/32" dia. holes, six 3/8" dia. horizontal ports for heating and cooling, plus eight ¾" dia. tapered holes on the edge. *Vega* was the *only* steel of many tried that could successfully hold the close tolerances of .0002" on centers of the 1,280 holes! Will the steel you use behave in hardening like this?

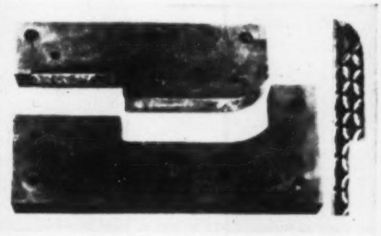


Easy, Low Temperature Heat Treating. You heat treat *Vega* from a temperature of only 1550°F (actually 200°F *lower* than the 5% chromium air-hardening grades!). No need for special, high temperature furnaces! Are you getting the benefits of *low temperature* heat treating from the air-hardening steel you use?

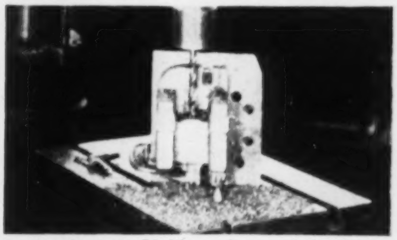
Extra Economy in Hardening. Because of *Vega's* lower hardening temperature, troublesome pack hardening to avoid excessive scaling is usually unnecessary. Does the air-hardening steel you use give you this *extra economy* in hardening?



Uniform Deep Hardenability. *Vega* gives you the advantages of uniform, deep hardenability in very heavy sections. For example, *Vega* hardens to Rockwell C-60 from surface to center in sections as large as 8" round. How does the steel you use compare on this score?



Toughness with Good Hardness. This punch and die blanks 1/4" diamond threshold plates at one stroke. With previous air-hardening die steel, tools chipped and broke before any real production was made. With *Vega* these tools are in regular production—and there are no signs of wear or chipping to date. Will the steel you use perform in service like this?



Good Machinability. Unlike ordinary air-hardening grades, *Vega* has a well balanced analysis with a small percentage of hard-to-machine alloys. Field tests prove it to be one of the easiest of all air-hardening grades to machine. If the air-hardening grade you use fails to provide this *good machinability*, you're missing out on lower costs.

change to *Carpenter* STEEL

Matched Tool and Die Steels

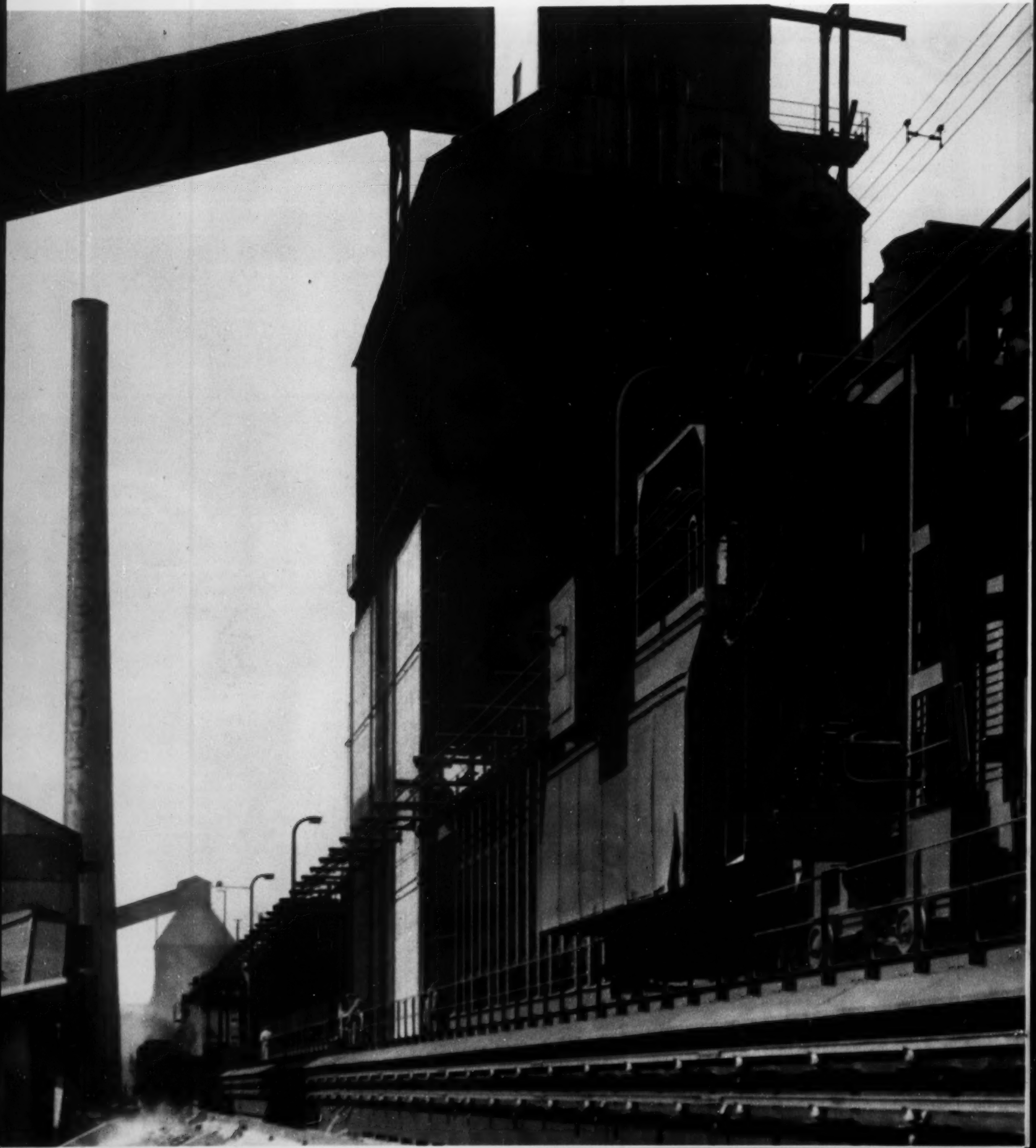
the standard tool steels of industry

***. . . modern* die steels engineered to meet *today's* requirements!**

Export Department: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"

Get Immediate Delivery . . . Call your Carpenter Mill-Branch Warehouse, Office or Distributor.

When you're ready



to rebuild or repair . . .

just call on Koppers!

● Many coke-oven plants, similar to the one shown here, have been designed and erected by Koppers. Constructing new coke ovens is one of the major services we offer to the Iron and Steel Industry.

However, there is another Koppers service that is also important—a service that is being used by more and more steel companies. We refer to the repairing of coke ovens.

Even in a period such as the past five years of accelerated activity in new construction, Koppers has repaired 1,100 ovens for 20 major steel companies. These companies have found that there is a basic economy in bringing to bear on their repair projects our engineering skills and experience that date back to 1926.

If your plans call for the repair or rebuilding of coke ovens—or for new construction—just call on Koppers. We will welcome the opportunity of discussing your problems with you.

Constructing, rebuilding or repairing coke ovens is just one way in which Koppers serves the steel industry. For any kind of metallurgical construction, you can count on Koppers.

● Typical Koppers-Becker Underjet Coke Ovens. Built in two batteries of 53 ovens each, these 106 ovens carbonize approximately 2,600 net tons of coal per day. They are underfired with coke-oven gas and are equipped with waste-gas recirculation.

KOPPERS

Engineering and Construction Division

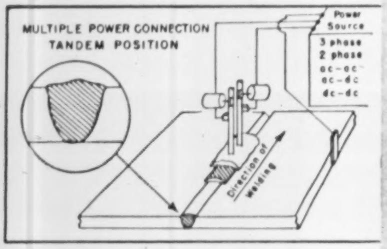
KOPPERS COMPANY, INC., PITTSBURGH 19, PENNSYLVANIA

CUT YOUR WELDING TIME IN HALF *with* UNIONMELT

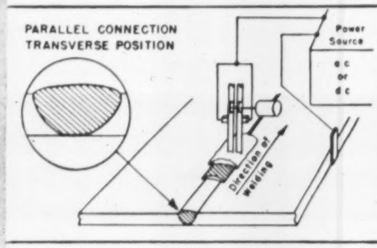
Multiple Electrode Welding

UNIONMELT Multiple Electrode welding with two or more electrodes in tandem, transverse, or other positions increases welding speeds up to three or four times faster than single electrode welding.

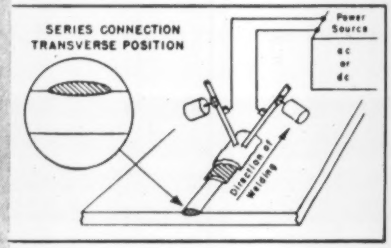
By using two or more electrodes in the same weld zone, magnetic reaction can be regulated to provide exceptional control over arc direction and weld shape.


MULTIPLE POWER CONNECTION
TANDEM POSITION
Power Source
3 phase
2 phase
ac-ac
ac-dc
dc-dc
Direction of Welding

Extra High-Speed Welds are made with multiple power connection and the electrodes in the tandem position. Speed is three to four times that of single electrode welding. This is particularly suited for welding long continuous seams, well-prepared and well-fitted, as in pipe, tanks, pressure vessels, and structural assemblies.


PARALLEL CONNECTION
TRANSVERSE POSITION
Power Source
ac
or
dc
Direction of Welding

Extra Wide, High-Speed Welds are made with parallel power connection and the electrodes in the transverse position. Speed is twice as fast as for single electrode work. This is particularly useful for welding seams with gaps or other irregularities, as in center sills, ship plate, and heavy, hard-to-fit work.


SERIES CONNECTION
TRANSVERSE POSITION
Power Source
ac
or
dc
Direction of Welding

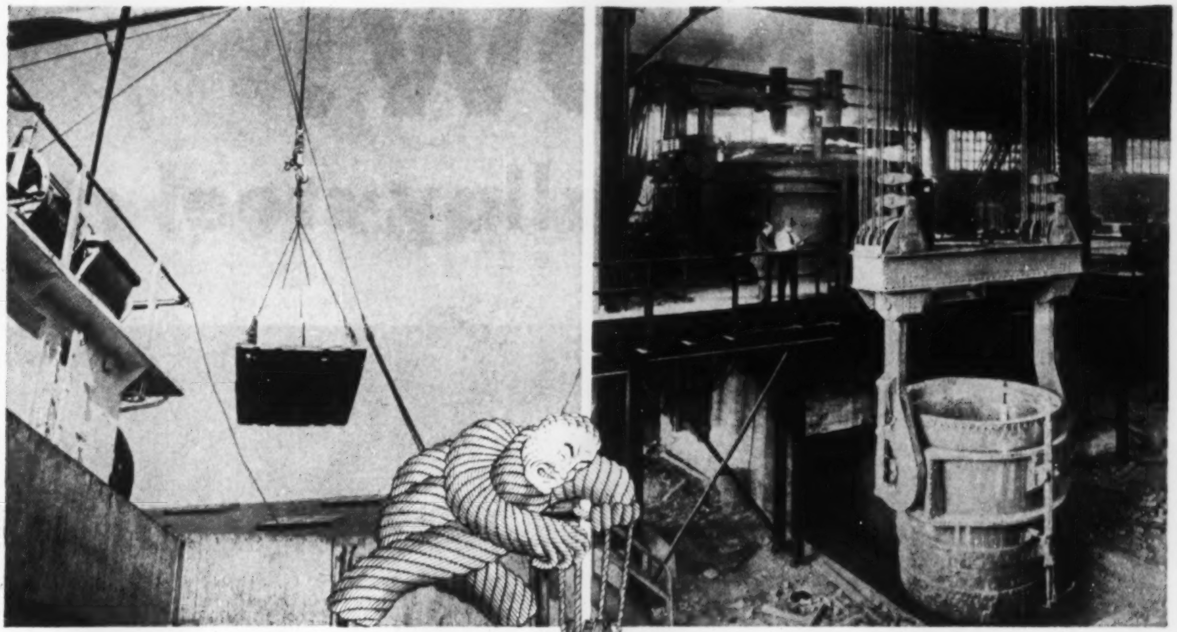
Extra Shallow, Wide Welds are made with the series power connection and the electrodes in the transverse position. Speeds are many times faster than single electrode work and the dilution of the deposit is far lower than can be produced with a single electrode. This process will open new possibilities for surfacing and cladding all kinds of articles by automatic welding.

Complete UNIONMELT machines are available for multiple electrode welding and all UNIONMELT apparatus is designed for easy installation in any plant or factory. LINDE's engineers will be glad to determine how UNIONMELT Multiple Electrode Welding can best benefit you. Call your nearest LINDE office for more details on UNIONMELT Multiple Electrode Welding.

Linde
TRADE-MARK

LINDE AIR PRODUCTS COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
Offices in Other Principal Cities
In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto

The terms "Linde" and "Unionmelt" are registered trade-marks of Union Carbide and Carbon Corporation.



You Can Hoist More On Any Crane with the...

Tuffy SLINGS

Tuffy® Team

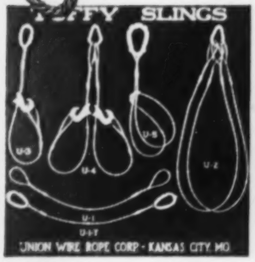
A NEW Tuffy HOIST LINE

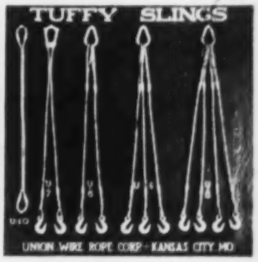
Sling *service* life and sling safety *went up* and sling *costs went down* with the introduction of the entirely new, patented, 9-part machine braided wire fabric construction of Tuffy Slings. It's a construction so flexible and so tough you cannot materially damage the fabric when kinking or knotting it. More and more users throughout the industry have forgotten about complicated specifications—now they say Tuffy, of a given diameter, length and type. That's all the Tuffy distributor needs to fill orders promptly. There are Twelve Tuffy Types factory fitted, or you can order Tuffy braided wire sling fabric on the reel if you do your own rigging. Now, because Tuffy Sling users kept asking for it, there is a specially designed and constructed TUFFY HOIST LINE. It's new on the market, but it has weathered many, many months of laboratory research and testing, and many more months of field testing on OVERHEAD, STIFF LEG and MOBILE CRANES, and on CLAMSHELLS AND DERRICKS.

Reeve your cranes with Tuffy Hoist Line. See for yourself how Tuffy flexibility, wearability and toughness to absorb load shocks gives you the longest service life you've ever had.

Three Little Words to Your Distributor

It is as simple as that to order. The name Tuffy, the diameter and length gets you the top hoist line value for any crane. To order Tuffy Slings use the same three words plus the type of sling wanted. Write us for name of nearest distributor and your copy of the comprehensive 48-page Tuffy Sling Handbook and Rigger's Manual.





union Wire Rope corporation

2160 Manchester Ave. • Kansas City 26, Mo.

Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric

NOW!

Condition alloy steel at

lower cost with Norton

BZZ wheels

NORTON
ALUNDUM
NORTON
ALUNDUM

Get the "TOUCH of GOLD" in your billet grinding

How do you figure your costs of grinding alloy steel billets, slabs, sheet bars and strips?

In terms of

— cost per ton ground?
— cost per pound of metal removed?
— man-hours per ton ground?

Any way you reckon it, Norton BZZ Wheels will register by far the best score on your cost sheet. After six years of developing and field-testing, these exceptional wheels are making good in a big way.

Here are the benefits they're bringing to mills across the country:

Advantages To Management—Lower cost grinding . . . increased productivity . . . greater safety . . . better finish.

Advantages To Operators—Faster cutting . . . easier handling . . . safer.

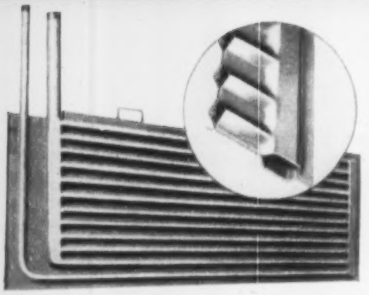
Let us prove how Norton BZZ Wheels can bring these same advantages — the sure "Touch of Gold" — to your own conditioning of alloy steel. Your Norton Abrasive Engineer will gladly arrange a test in your mill. Or write direct to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities — listed in your telephone directory, yellow pages, under "Grinding Wheels." *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

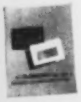
NORTON
ABRASIVES

Making better products . . .
to make other products better

PLATECOILS *cured coil-itis** *and tripled the capacity of this tank*

At the tank pictured below at Continental Motors Corp., three crankcase sections can be cleaned at one time when Platecoils are used as the heating medium, while only one crankcase can be cleaned with pipe coils in the tank. Continental has also found that the high efficiency of the Platecoils provides fast heating for quick starts. Their flat surface coats less frequently and takes only about half the time to clean when it does.





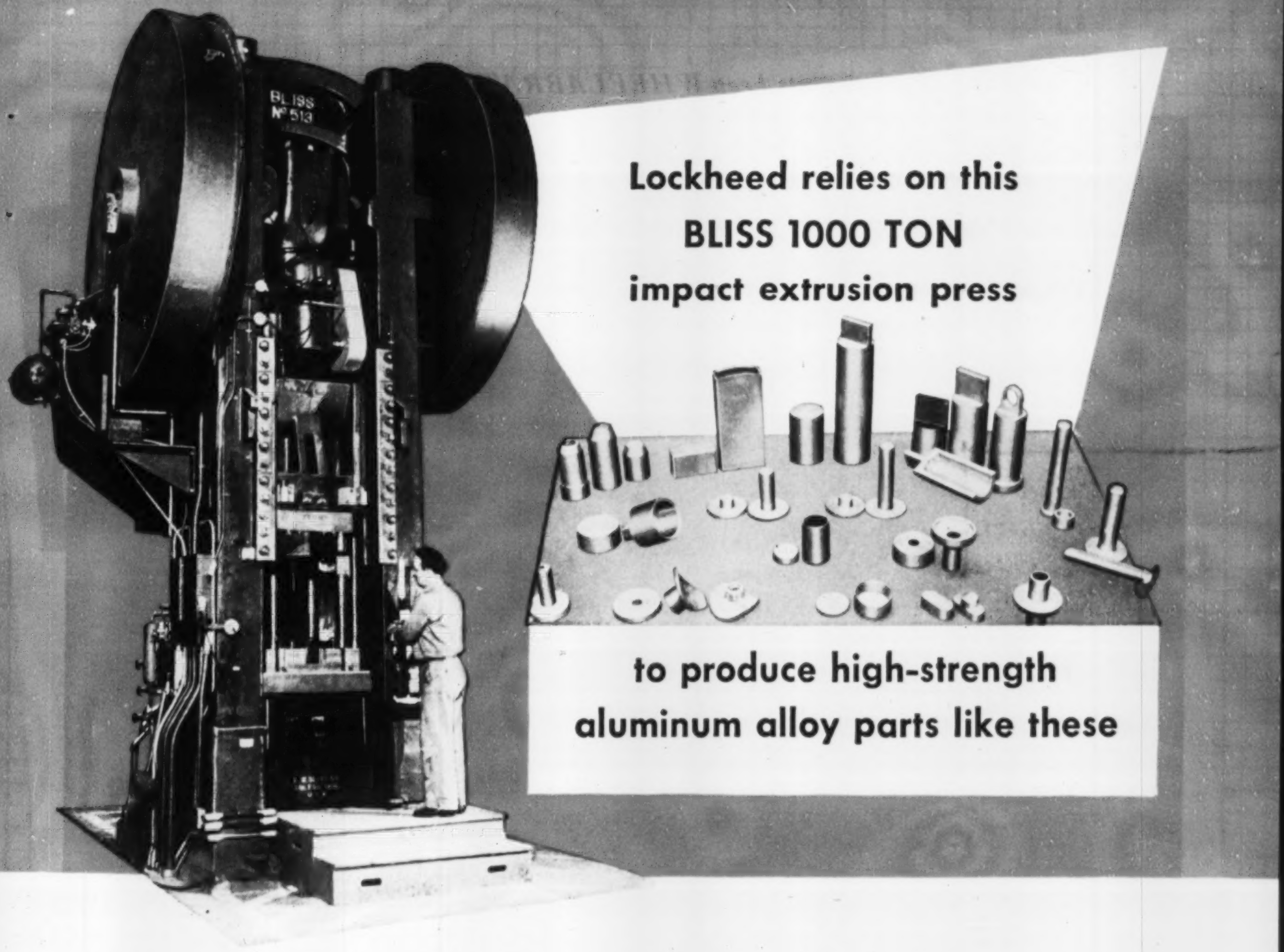
Bulletin P72 shows how Platecoils are replacing pipe coils at a savings throughout industry. Send today for your copy.

PLATECOILS *replace pipe coils for 50% of the cost*

* Coil-itis is the constant doctoring of wet processing tanks for pipe coil troubles. It can be cured easily by replacing pipe coils with Platecoils. Immediately, you will notice the difference as Platecoils put new life and profits into your heat transfer processes. They heat or cool 50% faster and take 50% less space in the tank. They save as much as 50% in initial cost and 50% in maintenance costs in addition to overcoming the limitations and operating difficulties of old-fashioned and outmoded pipe coils.

Platecoil Division, TRANTER MANUFACTURING, inc., Lansing 4, Michigan

For fast shipment see your local distributor



Lockheed relies on this BLISS 1000 TON impact extrusion press

to produce high-strength aluminum alloy parts like these

and saves thousands over conventional machining methods

This press, largest of its kind in the aircraft industry, has saved Lockheed up to 75% in time as compared to machining, and up to 90% in material.

In fact, Lockheed engineers estimate that transfer of only 15 parts from conventional machining to impact extrusion will mean savings of $52,000 a year.

Lockheed's experience proves the importance of picking the right press for the job. And we honestly believe that our engineers are best equipped to help you make that choice. In representing Bliss—who makes more types and sizes of mechanical and hydraulic presses than any other company—they represent the world's largest press builder. Unparalleled skills and experience stand behind each Bliss press recommendation.

If you have a press problem—from a single press to an entire press room—consult a Bliss engineer or write directly to address below.

BLISS on your press is more than a name... it's a *guarantee*

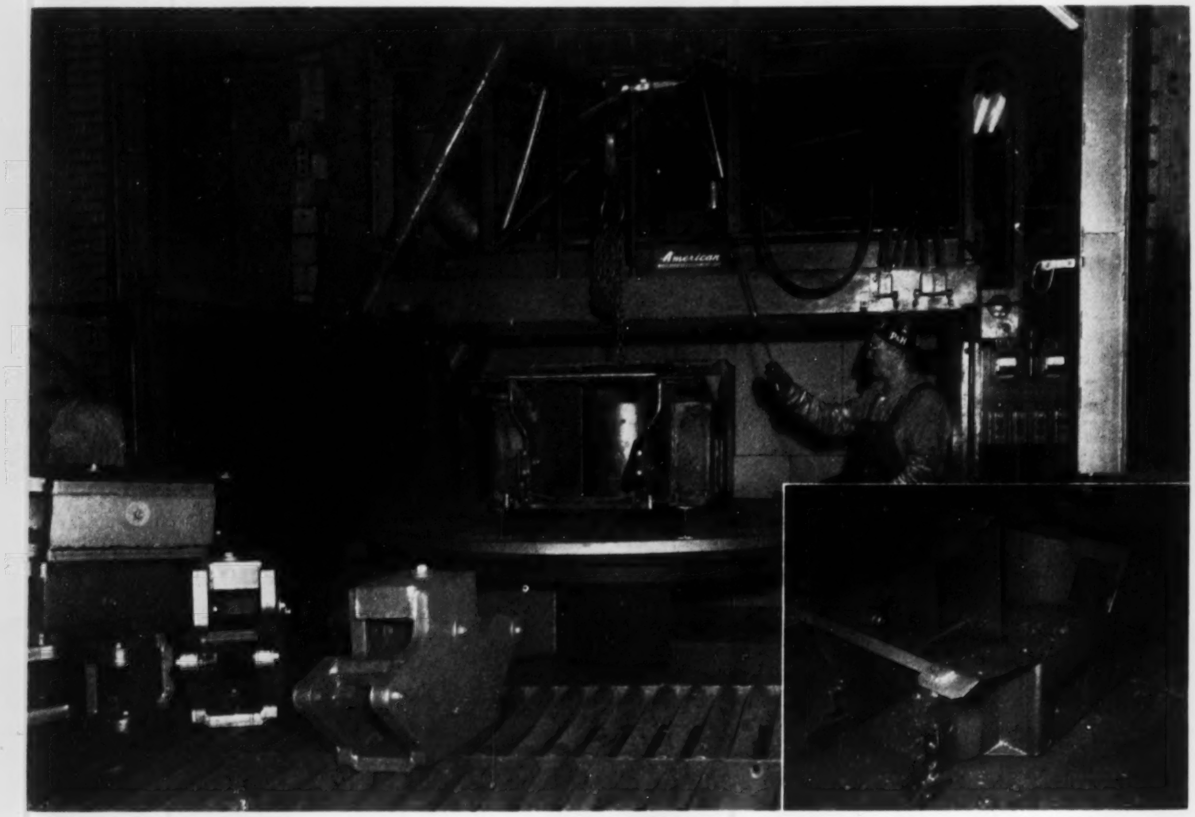
E. W. BLISS COMPANY, Canton, Ohio

PRESSES, ROLLING MILLS, SPECIAL MACHINERY

Subsidiary: The Die Supply Company, Cleveland, O. • E. W. Bliss (England) Ltd., Derby • E. W. Bliss Company (Paris) France

U. S. Plants in Canton, Salem and Toledo, Ohio; and Hastings, Michigan. *Branch Offices* in Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Rochester, Toledo; and Toronto, Canada. *West Coast Representatives:* Moore Machinery Co., Los Angeles and San Francisco; Star Machinery Company, Seattle. *Other representatives throughout the world.*

pioneering developments keep WHEELABRATOR® first in blast cleaning



Could you clean this Weldment in 3½ minutes?

Hyster Co. Does With an Airless Wheelabrator

In only 3½ minutes' time all mill scale, rust, welding flux and spatter are completely removed from lift truck welded frames, similar to that illustrated above, at The Hyster Co., Danville, Ill. This production speed is achieved with Wheelabrator airless abrasive blast cleaning which has replaced time-consuming wire brushing for all Hyster's weldment cleaning requirements.

Whereas it had formerly required 90 minutes of manual wire brushing to obtain an acceptable cleaned surface on this intricate frame, the Wheelabrator's hard hitting abrasive blast coverage removes all foreign material in 3½ minutes. Equally impressive time savings are effected on the entire range of welded members produced — at least a 50% reduction on every piece.

In addition to the time savings resulting, Hyster has realized other important benefits from Wheelabrating. An etched surface is provided to which final finishes are tenaciously anchored. Working conditions were vastly improved through the elimination of the dust hazard created by wire brushing, improved work quality and overall cleaning room cost reductions were effected.

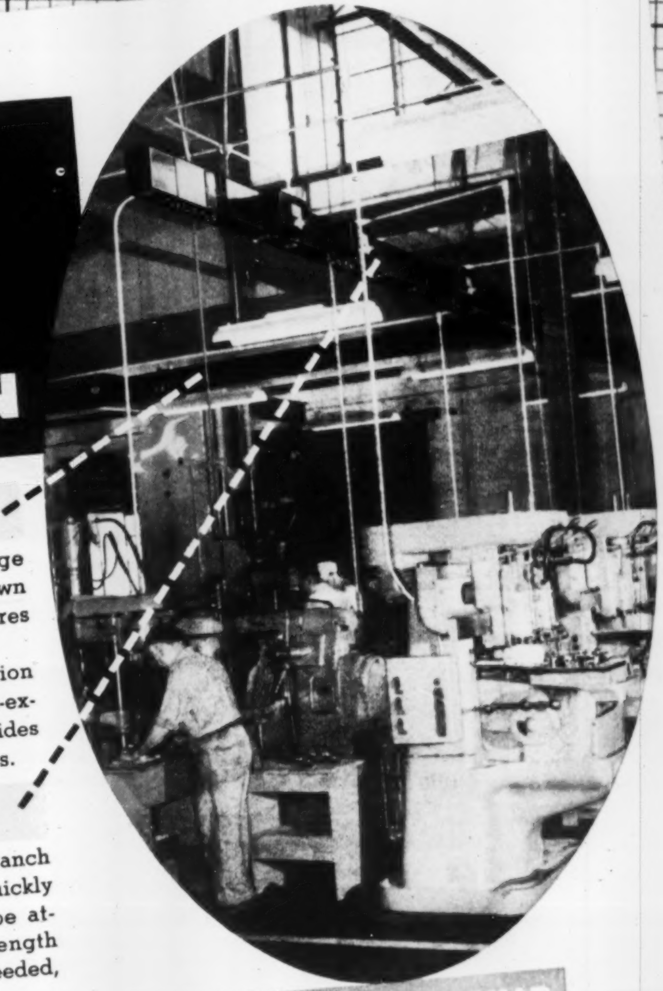
This is not an isolated example. The Wheelabrator is making similar savings throughout the welding industry. A complete line of standard units and special production designs for cleaning all sizes and shapes of weldments is available. They will produce the surface cleanliness you desire at the lowest possible cost.

Bulletin 784 shows how four weldment producers have cut their cleaning costs. Send now for your copy.

American
WHEELABRATOR & EQUIPMENT CORP.
509 S. Byrkit St., Mishawaka, Ind.

Wheelabrator®
AIRLESS BLAST CLEANING

for time-saving, money-saving POWER DISTRIBUTION



SQUARE D FEED-IN DUCT

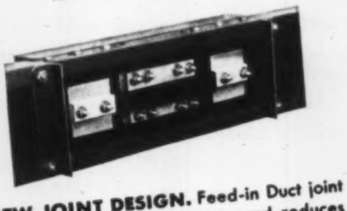
is the most efficient way to transmit large amounts of power. It provides the lowest known voltage drop—only 1.8 volts per 1000 amperes per 100 feet.

Exclusive design requires no ventilation —permits a totally enclosed, compact, dust-excluding enclosure. Rigid construction provides high resistance to heavy electrical stresses.

SQUARE D PLUG-IN DUCT

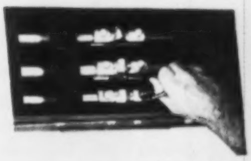
provides flexible power distribution for branch circuits. Machinery can be rearranged quickly at minimum cost. Plug-in units can be attached at frequent intervals along the length of the duct, providing power where it's needed, when it's needed.

BUSWAY FEATURES PROVE DESIGN LEADERSHIP



NEW JOINT DESIGN. Feed-in Duct joint design saves installation time and reduces maintenance cost. Duct ends are identical —unnecessary to select mating ends before positioning or hanging duct sections. Outward-facing, pre-installed bolts permit rapid assembly and easy maintenance.

ROUND BUS BARS for Plug-in Duct provide greater mechanical strength and resistance to short-circuit stresses. Circuit breaker or fusible type plug-in units are easily installed at 2-foot intervals along both sides of the duct. Plug-in stabs grip the round bus bars with exceptionally high pressure.



FLEXIBLE CONNECTORS of laminated copper join bus bars between sections—permit proper alignment, insure tight joints and provide for expansion and contraction at Plug-in duct joints. All bolt heads face outward for greater accessibility.

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS

SQUARE D COMPANY

Certified BRAD FOOTE GEARS

Copper Plated

Certified BRAD FOOTE PRODUCTS
Certificate
This is to certify that:

No increase in price!

A NEW WAY FOR YOU TO BUY GEARS

• Now you can specify by brand name the gears or assemblies you need and be sure that every desirable quality for longer life and lower service cost will be built into them. This name—*Certified* BRAD FOOTE Gears.

Certified BRAD FOOTE Gears are made according to an exclusive BRAD FOOTE formula which controls every step in the manufacturing process. It is your assurance that the gears will have long-wearing teeth and bearing areas, and tough cores that will give service equal to or better than any other gears made.

Copper Plating* permits smooth, quick run-in. It is clean and prevents rust and corrosion before gears are put in service. It's your positive identification of the best gears that money can buy. *Yet . . . you pay no more.*

The Certificate furnished with *Certified* BRAD FOOTE Gears and assemblies certifies strict adherence to specifications and the exclusive BRAD FOOTE formula. It proves that *"no one shares our responsibility."*

**Gears over 30" diameter are protected by copper-colored water-soluble paint which need not be removed before placing in service*

Write today for descriptive literature

BRAD FOOTE GEAR WORKS, INC.

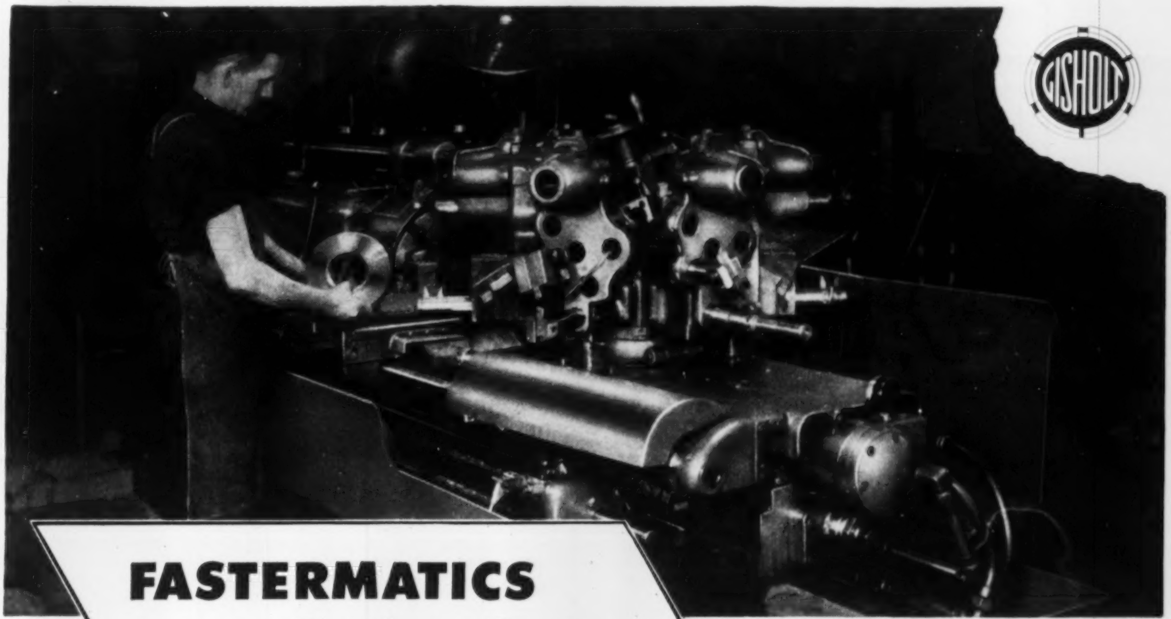
1309 South Cicero Avenue • Cicero 50, Illinois
BIshop 2-1070 • OLympic 2-7700

subsidiaries

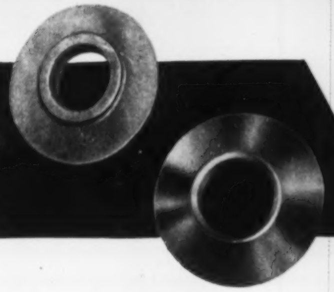
AMERICAN GEAR & MFG. CO.
Phone: Lemont 920
Lemont, Illinois

PITTSBURGH GEAR COMPANY
Phone: SPaulding 1-4600
Pittsburgh 25, Pennsylvania

© BFGW, INC.



FASTERMATICS
Produce Faster— Pay Off Faster

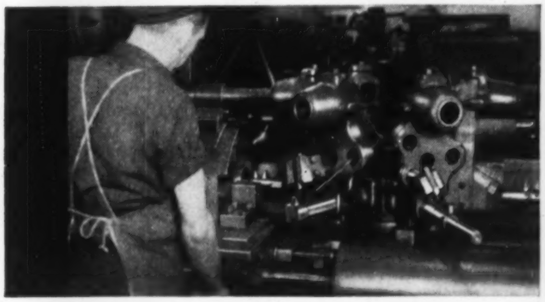


It may seem incredible, in this day and age, for any major machine tool to "buy" itself in nine short weeks of operation. But that's exactly what the Fastermatic Automatic Turret Lathe did on this job of machining clutch plate hubs.

Former time, on hand-operated turret lathes, was 15 minutes per piece. The Fastermatic, with automatic control of all machine functions, reduced the time to only 3 minutes, floor to floor.

Earnings piled up so fast over former production costs that the Fastermatic paid for itself in just 9 weeks—or 893 hours of operation.

Do you have work that permits a number of cuts in one chucking? Investigate the Fastermatics. You may have a big opportunity to increase production, cut costs and save man power.



In this tooling setup, only 3 turret faces are needed to turn each part. With duplicate tooling on the remaining 3 faces of the hexagon turret, 2 parts are machined with each complete turret cycle. The operator merely loads and unloads the work.

THE GISHOLT ROUND TABLE *represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.*

GISHOLT
MACHINE COMPANY

Madison 10, Wisconsin

TURRET LATHES · AUTOMATIC LATHES · SUPERFINISHERS · BALANCERS · SPECIAL MACHINES

Typical Fillet Speeds

Electrode Size	Amps., AC	Fillet Size	Speed, in./min.
3/16"	290	1/4"	15
7/32"	325	5/16"	15
1/4"	395	3/8"	15

Deposition Rates

DH-5			E-6012
Electrode Size	Amps.	Deposit #/hr.	Deposit #/hr.
3/16"	250	6.8	4.5
3/16"	280	7.9	
3/16"	320	9.6	
7/32"	300	9.0	5.8
7/32"	340	10.1	
7/32"	380	12.0	
1/4"	350	11.2	7.0
1/4"	400	12.8	
1/4"	450	14.7	

Try to match this for

You can't — unless you use the . . .

Deposits up to twice as many pounds per hour as an E-6012

That's right, the DH-5 is in a class by itself, when it comes to high welding speed and sound deposits in horizontal and flat positions. It's Harnischfeger's answer to the demand for lower welding costs. It's your answer to the need for faster, better work.

Powdered metal in the coating becomes part of the deposit — increases thermal energy and efficiency. By simply dragging the DH-5, the operator gets the speed and bead appearance ordinarily associated with submerged arc welds.

Wherever they've tried it, weldors like the DH-5. It's fast, it's easy to use. There's no splatter. Slag removal is easy and quick. The bead shape is flat and smooth.

The DH-5 has good, as-welded, mechanical properties, too. See for yourself:

Tensile strength	85,000-95,000
Yield strength	73,000-77,000
Elongation in 2"	15-25%

If you're interested in your cost picture — and who isn't, today?—you owe it to yourself to try the DH-5 without delay. See your P&H representative or distributor now.

For further facts, write for bulletin.

P&H WELDING DIVISION
HARNISCHFEGER CORPORATION
4411 WEST NATIONAL AVE. • MILWAUKEE 46, WISCONSIN

the **P&H** *Line*

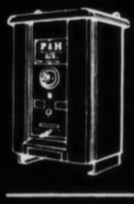
TRUCK CRANES · DIESEL ENGINES · POWER SHOVELS · PREFABRICATED HOMES · ELECTRIC HOISTS · SOIL STABILIZERS · WELDING EQUIPMENT · OVERHEAD CRANES

2596

high-speed welding!

. . New P & H DH-5 Electrode

America's most complete line of arc-welding equipment and electrodes

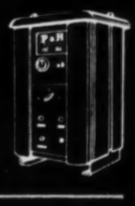


P&H DC RECTIFIER WELDER

Four sizes — 200, 300, 400 and 500 amps (NEMA-rated). No moving coils to break down — no bearings, brushes, commutator, brush riggings, etc., to replace. Dial-lectric Control gives you fingertip heat-control at the work.

P&H POSITIONERS

One finger is enough to position heavy weldments for economical downhand welding. Capacities from 2500 to 36,000 lbs. — remote-control and hand-operated models.



P&H AC WELDER

A full range of sizes up to 625 amps (NEMA-rated). All are connectable to 220 or 440 volts. Dial-lectric Instantaneous Remote Control is fingertip control — gives you any heat you want, right at the work.

P&H WN-250
ENGINE-DRIVEN ARC WELDER

NEMA-rated at 200 amps, but pulls 300 amps. Has full 20-gallon gas tank — runs all day on one tankful. Powered by four-cylinder, 180 GLU, Waukesha, water-cooled gasoline engine.

P&H Welding equipment is manufactured and sold in Canada by
REGENT EQUIPMENT MANUFACTURING COMPANY LTD.
455 King Street West • Toronto, Ontario, Canada

THE GREATEST SHOWING OF INDUSTRIAL RUBBER PRODUCTS ON EARTH
TONKA

TONKA WATER HOSE
Spec. L-47

SIZE	BRAID	WORKING PRESSURE	O.D.	WEIGHT 100 FT.
1/2"	2	300 lbs.	15/16"	25 lbs.
5/8"	2	250 lbs.	1- 1/16"	30 lbs.
3/4"	2	250 lbs.	1- 3/16"	35 lbs.
3/4"	3	300 lbs.	1- 9/32"	41 lbs.
1 "	2	250 lbs.	1- 7/16"	45 lbs.
1 "	3	300 lbs.	1- 1/2 "	50 lbs.
1-1/4"	3	250 lbs.	1-27/32"	72 lbs.
1-1/2"	3	200 lbs.	2- 3/32"	83 lbs.

Ordinary Water Hose?

Not on your life! This is a picture of a 50-foot coil of Republic's TONKA — the water hose that *will not kink!*

TONKA is noted for its dependability. It is a durable hose of braided construction and is especially suitable for general service in industrial plants, for contracting work, street washing, deck use, etc.

TONKA is just one of the many specialized hoses produced by Republic Rubber. Your local Republic Distributor stocks TONKA in lengths up to 500 feet, in sizes up to and including 1-1/2 inch. If his name is not listed in the yellow pages of your phone book, write directly to us for information on any Industrial Rubber Product.

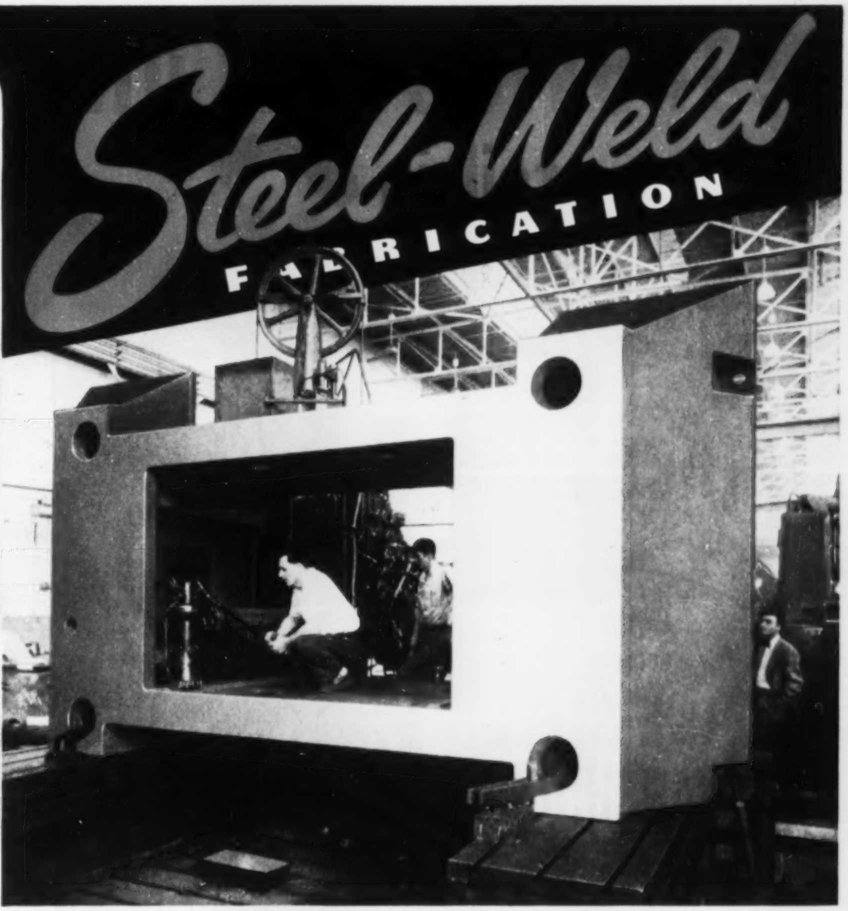
"Quality Hose Builders for Over 50 Years"

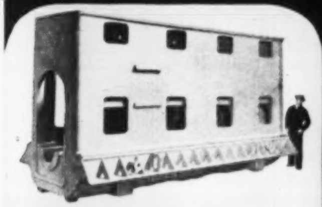
REPUBLIC RUBBER DIVISION

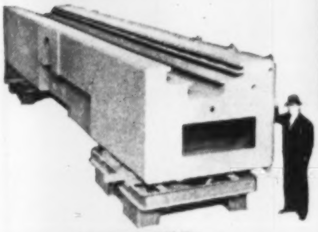
LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

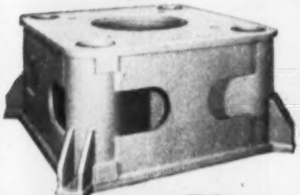
INDUSTRIAL RUBBER PRODUCTS

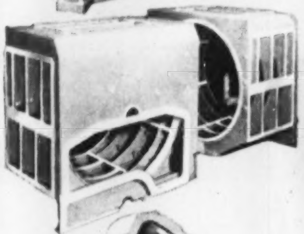
Steel-Weld FABRICATION











Use WELDED STEEL
for Greater Strength
with Less Weight!

Here is another heavy Steel-Weld Fabricated piece produced and machined to specifications by Mahon. This and the parts and assemblies illustrated at the left are typical of thousands of Steel-Weld Fabricated units produced and machined by The R. C. Mahon Company for hundreds of manufacturers of machine tools and other types of heavy mechanical equipment. If parts of your product could be produced to better advantage through Steel-Weld Fabrication, or, if you require large, heavy pieces where pattern costs and the time element are a consideration, you can turn to Mahon with complete confidence . . . personnel and facilities are available within the Mahon plant to do the complete job from drawing board to finished machining. You will find in the Mahon organization a unique source with complete ultra-modern fabricating, machining and handling facilities to cope with any type of work regardless of size or weight . . . a source where skillful designing and advanced fabricating technique are supplemented by craftsmanship which assures a smoother, finer appearing job embodying every advantage of Steel-Weld Fabrication. See Mahon's Insert in Sweet's Product Design File, or write for further information.

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN

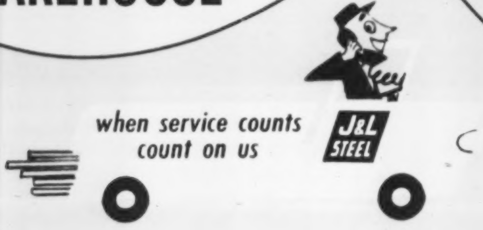
Engineers and Fabricators of Steel in Any Form for Any Purpose

MAHON

tail in the gate... need help?

Call your nearest

J&L STEEL WAREHOUSE



for a complete line of steels

SPECIALS: Jalloy (High Strength—Abrasion Resistance) Jalten (High Strength—Good Formability—Abrasion Resistance) Junior Beams • Junior Channels • Jaltread Floor Plate • Tool Steels • Stainless Steels.

STANDARD PRODUCTS: Hot Rolled and Cold Finished Bars and Shapes. Structural Shapes • Carbon and Hi-Tensile Plates • Hot and Cold Rolled Strip and Sheets • Wire Products • "Precisionbilt" Wire Rope.

for service that solves your problems

TECHNICAL SERVICE: Experienced J&L Metallurgists to help you with analyses and recommendations.

FABRICATION SERVICE: Shearing, forming, torch cutting, blanking, to *your* specifications.

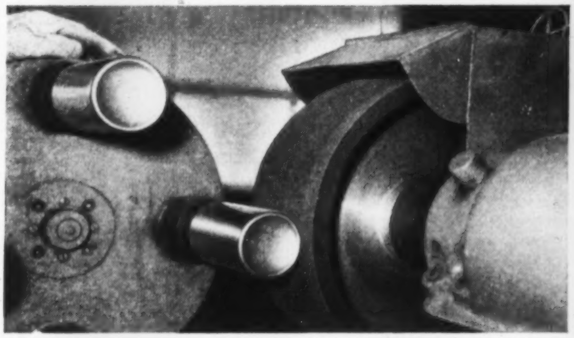
J&L STEEL

Jones & Laughlin

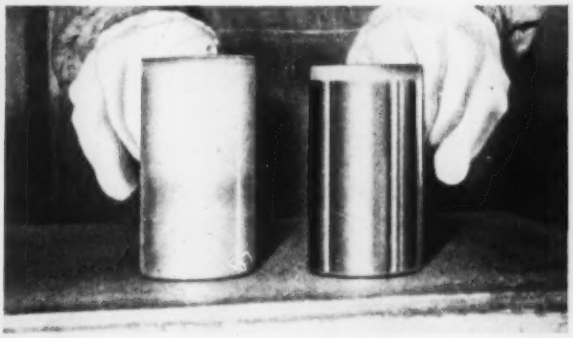
STEEL CORPORATION—*Warehouse Division*

How would you solve it?

(1) Production Problem: To cut unit costs of grinding and polishing stainless steel whip-cream dispenser cans. Nilsen Mfg. Co. had been jobbing out the cans to an outside source, paying a high .08¢ per can, due to old-fashioned methods, labor, material and delivery costs.



(2) Solution: A 3M Representative recommended that this Addison, Illinois, manufacturer install the 3M Method, using Grit #180 Resin Bond Belts running over a special contact wheel. Cans were placed on automatic work holders.

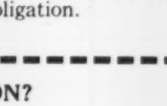


(3) Results: An immediate reduction in polishing costs. By installing the 3M Method, and doing the work themselves, Nilsen Mfg. Co. cut costs to only $.0125 per finished unit . . . a saving of $.0675 per can! A 3M Representative can help you solve your grinding and finishing problems, too. His services are available without cost or obligation.

3M
ABRASIVES

WANT MORE INFORMATION?

Minnesota Mining & Mfg. Co.
Dept. S-24, St. Paul 6, Minn.



☐ *Send me free booklet: "Case History Reports on 3M Abrasive Belts"*
☐ *Have 3M Representative Call*

NAME________________ TITLE________
COMPANY________________
ADDRESS________________
CITY____________ ZONE____ STATE________

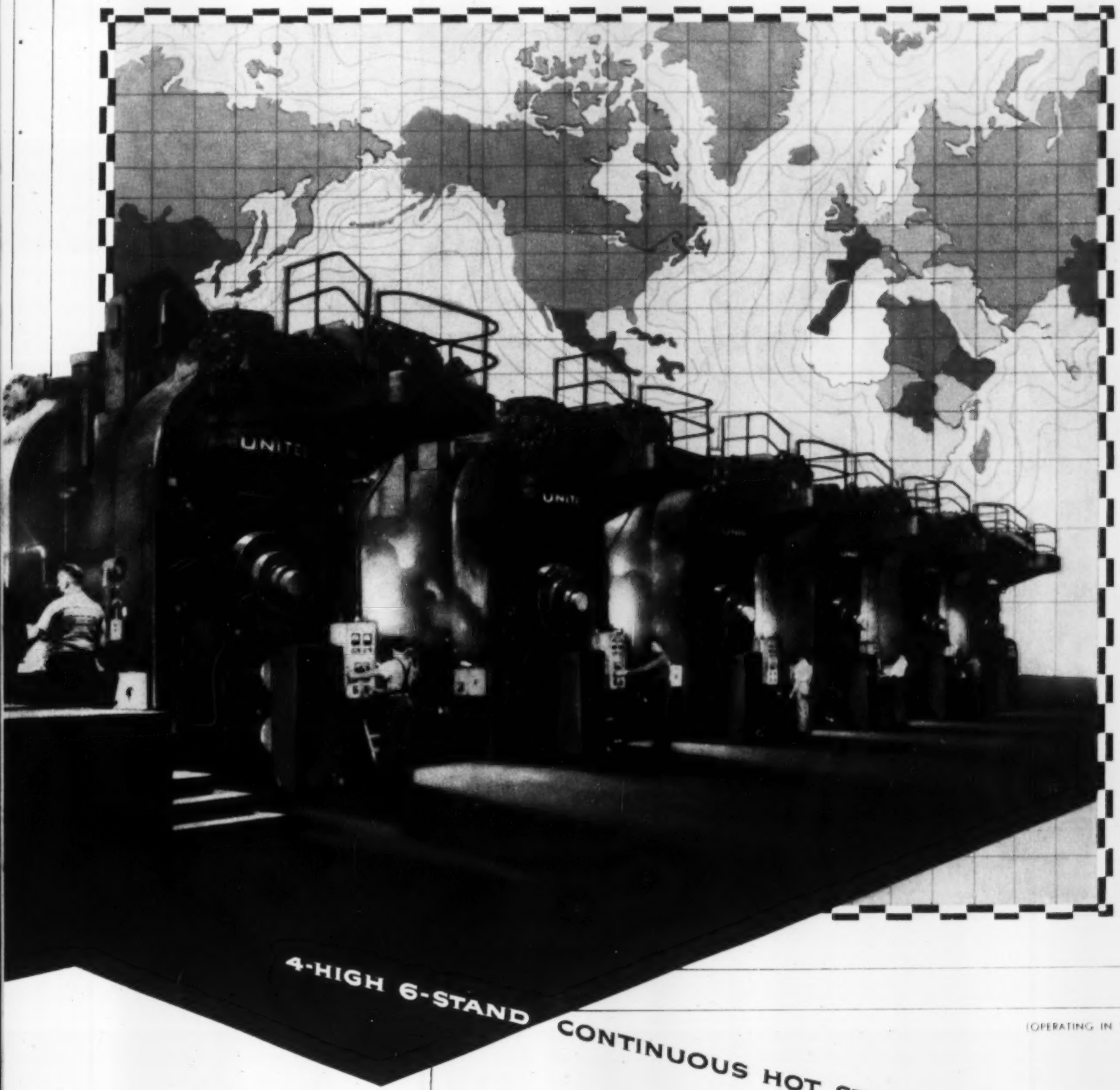
Made in U.S.A. by Minnesota Mining and Mfg. Co. General Offices: St. Paul 6, Minn. In Canada: London, Ont., Can. Export: 122 E. 42nd St., New York City. Makers of "Scotch" Pressure-Sensitive Tapes, "Scotch" Sound Recording Tape, "3M" Adhesives, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing.

Eagle Music Wire

—for Dependable Springs—

Nowhere is there a better example of Washburn care and precision than in Eagle MUSIC WIRE. Our own basic steel—close tolerances and care in handling, all make for superlative quality.

WASHBURN WIRE CO., New York City



4-HIGH 6-STAND CONTINUOUS HOT STRIP MILL

(OPERATING IN WALES)

DESIGNED AND BUILT BY **UNITED**

ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

UNITED can serve
you no matter where
in the world you are.

UEFCO ®

Plants at PITTSBURGH • VANDERGRIFT . NEW CASTLE • YOUNGSTOWN • CANTON

Subsidiaries: ADAMSON UNITED COMPANY, AKRON, OHIO • LOBDELL UNITED COMPANY, WILMINGTON, DELAWARE • STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.

The shape of rings to come

It is difficult to predict the shape tomorrow's air power will take. But one thing is certain — fabrication of many of the component parts, such as rings, bands, and the complicated assemblies will be accomplished by welding.

If a new alloy — a special metal — an intricate assembly pose a problem to design or manufacture perhaps our specialized knowledge gained in 35 years of welding fabrication can help to find a practical and economical solution. Our Product Development Division will be glad to put experience gained from working with every major U. S. jet engine manufacturer to work for you. In addition to fusion and resistance welding of ferrous and non-ferrous metals, American Welding can provide designing, engineering, metallurgical and machining facilities.

Write us today for complete details
110 Dietz Road • Warren, Ohio

THE AMERICAN WELDING & MANUFACTURING COMPANY • WARREN • OHIO

STEEL

February 15, 1954

Metalworking Outlook

$1-Billion Auto Expansion in 1954?

Paced by General Motors Corp., the automotive industry may spend a record total of more than $1 billion on new plant and equipment in 1954 despite the current business dip. Some 60 per cent of GM's $1 billion in planned expenditures will be paid out this year. American automotive firms spent $510 million in 1950, $851 million in 1951, $896 million in 1952 and $959 million in 1953 on new or improved facilities.

U. S. Steel To Invest $300 Million

U. S. Steel Corp. plans to invest $300 million in new steelmaking facilities this year. A proportionate share of that will go to western plants of the corporation. "I am very enthusiastic on the future of steel in the West, particularly at our Columbia-Geneva plant in Pittsburg (Calif.)," U. S. Steel Chairman Ben Fairless says.

A Decade of Peak Construction

Ten years and more of "peak load" for the heavy construction industry lie ahead. Members of Associated Equipment Distributors say there are no shortages of materials, equipment or funds to prevent them from keeping busy for a decade on roads, dams, bridges, tunnels, power plants, airfields and the like. Nor is there a shortage of skilled and unskilled workers, but the problem of finding or training good management men still plagues the industry.

More Money for Roads

The administration's highway aid bill, H. R. 718 introduced by Rep. J. Harry McGregor (Rep., O.), would raise annual federal aid for fiscal 1956-57 to $846.5 million, compared to $575 million annually at present. The funds would come out of gasoline tax revenues which at the current 2-cent rate amount to about $910 million a year. The bill would continue federal gasoline taxes at 2 cents. Sen. Francis Case (Rep., N. Dak.) introduced bill, S. 2859, calling for federal highway aid of $1 billion in fiscal 1956-57.

Prospects for Reform

The chances are excellent that Congress will approve the liberalized depreciation rules agreed upon by the administration and the House Ways & Means Committee. The committee will write a law providing for: Binding agreements on depreciation rates that can be made between the taxpayer and the Treasury; a choice for the taxpayer among a number of different methods for computing depreciation; and the use of the taxpayer's preference in rates where they differ by less than 10 per cent from the Treasury's. The important point is the choice to be permitted in picking different methods of figuring depreciation. For example, a double-rate declining balance method reportedly will be allowed. Under that, the

The Technical Outlook—p. 107   The Market Outlook—p. 161

old life-expectancy rates will continue, but the taxpayer will take his tax deduction at twice the straight-line percentage, then apply this percentage each year to the undepreciated balance. Thus, the write-off would be high in early years—about two-thirds of the cost would be written off during the first half of the item's life.

Aid to Shipyards

Look for increased activity among the nation's shipyards, now in bad shape for civilian business. The Maritime Administration is preparing proposals for Congress' consideration to spur merchant shipbuilding, and a report just issued by a subcommittee of the Senate Interstate & Foreign Commerce Committee pointedly shows the need for more American ships. It says that 80 per cent of the nation's active merchant marine is ten or more years old and will become obsolete during 1962-1965. The Defense department says there's now an immediate deficiency of 214 merchant vessels.

Coming: Test on U. S. Leasing

A new test of the government's machine tool leasing policy is in the making. Brown & Root Inc., Houston, Tex., wants to rent for nondefense production $9.7 million worth of facilities once used in producing hulls, turrets and related parts for medium tanks. Included are large numbers of machine tools and other production equipment. After pressure from capital equipment producers, the Office of Defense Mobilization last year issued a policy statement that said no further leasing arrangements would be made except under unusual circumstances. Expect no immediate ODM decision because of this touchy situation.

Inaction on T-H

The word on Taft-Hartley Law revisions still is: Don't count on any important changes. The Senate Labor Committee starts executive sessions Mar. 1 to write its revisions, but the House Labor Committee votes today on a motion to pigeonhole all action on changes in the act.

Straws in the Wind

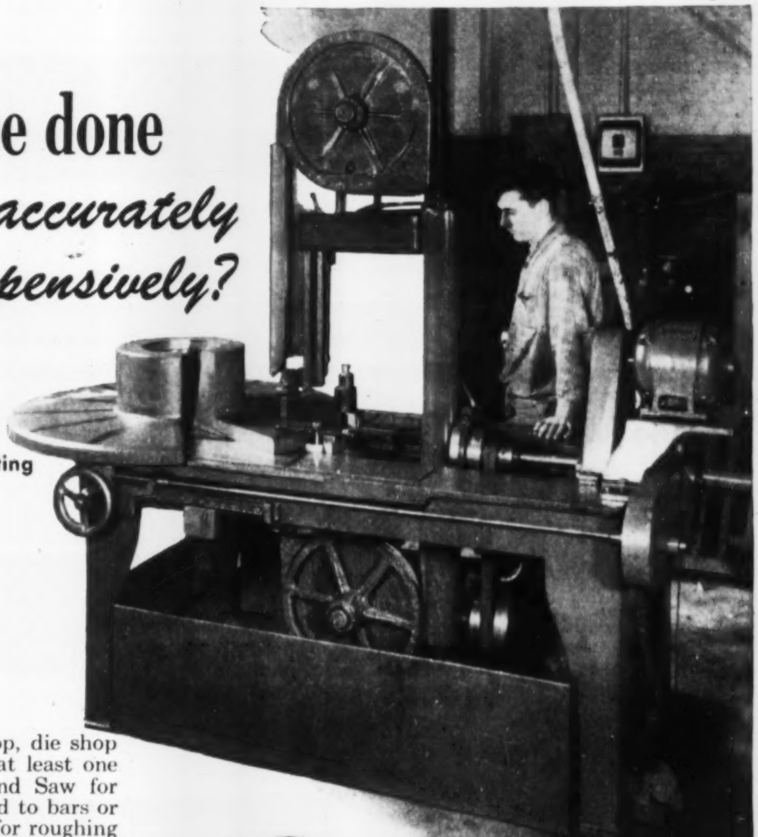
In the six-weeks period ending Mar. 1, International Harvester Co. will have recalled nearly 2000 workers in six Illinois and Indiana farm equipment plants. . .Industrial diamond prices are down to $2.40-$2.60 a carat. . .New foreign aid appropriation requests for fiscal 1955 will total about $3.5 billion.

This Week in Metalworking

Industrial supply houses foresee a $4.4-billion business in 1954 (p. 67). . . New tool and die business is holding up well (p. 69). . .Mushrooming production of reinforced plastics can mean new markets for machinery and equipment (p. 70). . .Aircraft industry earnings are unsatisfactory, says Curtiss-Wright Corp.. . .Nickel expansion is booming in Cuba (p. 73). . . A price break in titanium came last week as Titanium Metals Corp. cut its quotations on sheets and plates an average 12 per cent (p. 186).

How else could this job be done

so easily, so accurately and so inexpensively?

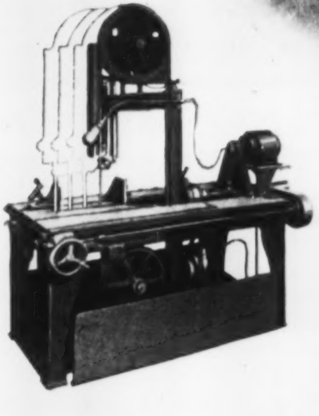


Segmentation of 42″ Steel Casting

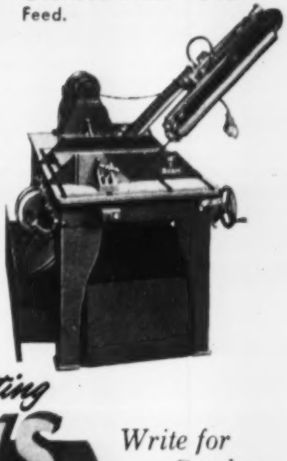
Every tool room, machine shop, die shop and maintenance department needs at least one No. 8 MARVEL Metal-cutting Band Saw for cutting off anything from ⅛″ drill rod to bars or billets of 18″ x 18″ cross-section . . . for roughing large work to size and shape, thereby saving hours of machining . . . for those occasional "trick" jobs, impossible on any other saw, that bob up in every plant.

Odd shapes that can't be held in the removable, quick-action vise, are easily set-up on the No. 8's large, T-slotted work table. MARVEL Overload-Relief Power Feed insures accurate cuts under the most adverse conditions because blade pressures are automatically held within limits which are pre-set instantly for each job. The blade is never forced beyond its capacity to efficiently and accurately remove metal . . .

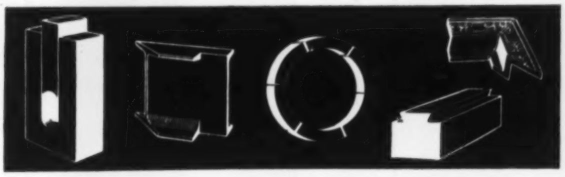
Close limits are further assured through the work being clamped rigidly to the bed of the saw and the blade power-fed through it instead of pushing the work through the blade. This is also true in miter cutting, as the blade column—*not the work*—is swung to the required angle. The handiest, most versatile machine tool, it is also the busiest in most shops.



This double exposure illustrates how the blade maintains its vertical position while moving into and through the work, impelled by the automatic MARVEL Overload-Relief Power Feed.



Column set at angle to cut 45° miter on 18″ beam. Entire saw column can be swung to cut at any angle from vertical to 45° right or 45° left.



MARVEL *Metal Cutting* **SAWS**

Better Machines—Better Blades

Write for Catalog

ARMSTRONG-BLUM MANUFACTURING CO.

5700 Bloomingdale Avenue *"The Hack Saw People"* **Chicago 39, U. S. A.**

Do you *MAKE* or do you *BUY* uncomplicated, plain-finished *steel stampings* of any kind?

If you ***make*** such stampings, Reliance ***ECON-O-GRADE*** sheets can help you reduce your steel costs.

If you ***buy*** them, pass the suggestion along to your supplier. Any saving he makes may mean a saving for you.

Where do these savings come in? Just this—***ECON-O-GRADE*** sheets cost us less than Reliance COMMERCIAL-OR-BETTER QUALITY sheets, so you pay less for them.

Whichever grade you buy, the steel must meet the functional requirements of the job for which it is intended. That means in finish, gauge, size and workability. It's strictly a matter of *job-fitting*.

And, your stampings need not be *too* "uncomplicated" either! You will find Reliance ***ECON-O-GRADE*** sheets suitable for most ordinary stamping operations like bending, forming and drawing.

Available in Cold Rolled and Hot Rolled Pickled finishes; in sheets, or sheared or slit to your working sizes.

Ask a Reliance "Dan" for more information about ***ECON-O-GRADE*** sheets. Go over your jobs with him. He'll explain the cost-saving possibilities.

REG. U.S. PAT. OFF.
DEPENDABLE DAN
will take care of it
for you!

Here's the gist of the Reliance JOB-FITTING idea—

. . . It's knowing our "stuff" . . . our "feel for steel."

. . . It's knowing your job . . . what you expect the steel to do for you.

. . . It's supplying in-stock sheet and strip best suited to your immediate need.

FOR HELPFUL ACTION CALL OUR NEAREST PLANT OR OFFICE

RELIANCE STEEL DIVISION

Processors and Distributors JOB-FITTED Sheet and Strip Steel

GENERAL OFFICES — BOX 4308 — PORTER STATION, DETROIT 9, MICHIGAN

PLANTS

CLEVELAND PLANT, 3344 E. 80th St., VUlcan 3-3600, Cleveland 27, O.
DETROIT PLANT, 13770 Joy Road, WEbster 3-5866, Detroit 28, Mich.
EASTERN PLANT, 2061 State Street, STate 7-5781, Hamden (New Haven 7), Conn.
MIDWEST PLANT, 1601 South Wolcott Ave., CAnal 6-2442, Chicago 8, Ill.

OFFICES

COLUMBUS 12, OHIO, 1373 Grandview Ave., Kingswood 6264
DAYTON, OHIO, 120 W. Second Street, Michigan 8591
DES MOINES 9, IOWA, 610 Fleming Bldg., Des Moines 2-1490
DETROIT 28, MICHIGAN, 13770 Joy Road, WEbster 3-5866
GRAND RAPIDS 2, MICH., 326 Keeler Bldg., GLendale 6-8569
INDIANAPOLIS 4, IND., 1509 Fletcher Trust Bldg., FRanklin 2333
JACKSON 18, MICHIGAN, 801 Reynolds Bldg., Jackson 4-6189
MILWAUKEE 10, WIS., 4622 W. Center St., Hilltop 2-1040
NEW YORK 19, N. Y., 250 West 57th St., COlumbus 5-4870
ROCHESTER 4, N. Y., 5 St. Paul St., BAker 1061
ST. LOUIS 8, MO., 4370 Lindell Blvd., LUcas 4550
TOLEDO 4, OHIO, 2114 Ohio Bldg., GArfield 8384
WORCESTER 8, MASS., 507 Main St., Worcester 5-8686

RELIANCE *Job-Fitted* PRODUCTS

COLD ROLLED STEEL STRIP — COILS — CUT LENGTHS — ALL TEMPERS
SHEETS: COLD ROLLED — HOT ROLLED — H. R. PICKLED — LONG TERNE — GALVANIZED
Standard and Production Sizes or Cut to Actual Working Dimensions

DETROIT DSC STEEL

PRODUCERS OF
Coke • Coal Chemicals • Pig Iron • Ingots
Slabs • Sheet Bars • Billets • Wire Rods
Hot Rolled and Cold Rolled Sheet and Strip
Low and Medium Carbon Manufacturers' Wire
High Carbon Specialty Wire • Welded Fabric

GENERAL OFFICES
DETROIT 9, MICHIGAN

Copyright 1954 D.S.C.

February 15, 1954

The Towering Challenge!

An address on "Sound Money" delivered by Secretary of the Treasury George M. Humphrey before the Economic Club of Detroit on Nov. 9, 1953, deserves much more attention than it has received to date.

The first five sentences of his address are: "We live today in a difficult time. The world is shadowed by the fear of war and destruction. Freedom itself is at stake. Today America is called upon to save the freedom that we cherish. What principles should rule and guide us as we strive to save the heritage we have?"

Then Mr. Humphrey discussed a comprehensive, constructive program for the nation based upon a federal government worthy of trust, sound money, an equitable tax structure and adequate provision for national security. After outlining this program in considerable detail, he said, "But above all these matters, I venture to suggest that one challenge rises to tower over all others. We must provide that moral leadership, that steadfastness of spirit and mind, which alone can make us worthy of the high commission that history has conferred upon us."

What principles should rule and guide us in attempting to provide that moral leadership? Mr. Humphrey named these: "We must care more for truth than for success. We must care more for the hopes of the people than the votes of the people. We must always worry more about our problems than the headlines. We must scorn the glib promise, the false phrase, the shallow excuse and the clever evasion."

It is a long time since anyone in high government office has spoken as eloquently as Mr. Humphrey about the importance of moral leadership and high principle in the administration of government affairs. Of course it will not be easy to instill a spirt of higher standards of ethics among the personnel of an overgrown government organization in which for so many years so little importance has been attached to the necessity of maintaining high principles. The fact that Mr. Humphrey and President Eisenhower are placing new and strong emphasis on this problem should be gratifying to every American.

E. L. Shaner

EDITOR-IN-CHIEF

TURNOVER IS COSTLY: Cutting the cost of labor turnover is a challenge to industrial management. Throughout the years the regulations governing the hiring and firing of employees in industrial plants and the red tape involved in the bookkeeping not only of employment records but also of old age benefits, unemployment insurance, withholding tax, and possibly deductions for hospitalization and savings bond purchases have hiked the cost of separating a man from the payroll to from $100 to $300 per separation.

This, of course, calls for efforts on the part of industry to find ways to reduce the rate of labor turnover. Experts who have been studying this problem have come up with nine suggestions (p. 78) on how to reduce labor turnover. One of the best of the nine is to use the exit interview intelligently so as to discover company shortcomings.

* * *

EGGS IN MORE BASKETS: For about five years Pressed Steel Car Co. Inc., Chicago, has been engaged in a diversification program that should be of great interest to the executives of many other industrial corporations that are operating on a narrow base of products.

For a half-century Pressed Steel Car's sole major product was freight cars (p. 71). It was one of several large companies in the car building field. The volume of orders for railroad cars fluctuated within wide limits and serious and prolonged depressions hit the car building industry rather frequently. The result was that Pressed Steel Car, as well as some of its competitors, sometimes had only red ink to show for a year's work.

Since the company started in 1948 to broaden its base, it has acquired five new divisions whose products include petroleum equipment, engine lathes, aircraft parts, farm holding tanks, industrial and residential tanks, electrical conduit fittings, stainless steel cook ware, automobile bumper guards and accessories and waste receptacles.

* * *

FROM RED INTO BLACK: This broadening of the base from virtually one product to a dozen already has proved highly profitable for Pressed Steel Car. The company's sales in 1953 exceeded $90 million, which is more than double the average annual volume over the last five years. Its net income after taxes in 1953 is estimated at $2.5 million.

It is interesting to compare this 1953 showing, which is based on diversified operations, with that of 1950, which was the last year before the diversification program began to click. In 1950 the company sold only 780 freight cars, grossed $16.8 million in sales and wound up the year with a deficit of $901,000. In fact, the company lost money in three of the last eight years—in 1950, 1948 and 1946. Diversification probably has lessened the hazard of red ink appreciably. Certainly it has given management a fair chance to demonstrate what it can do.

* * *

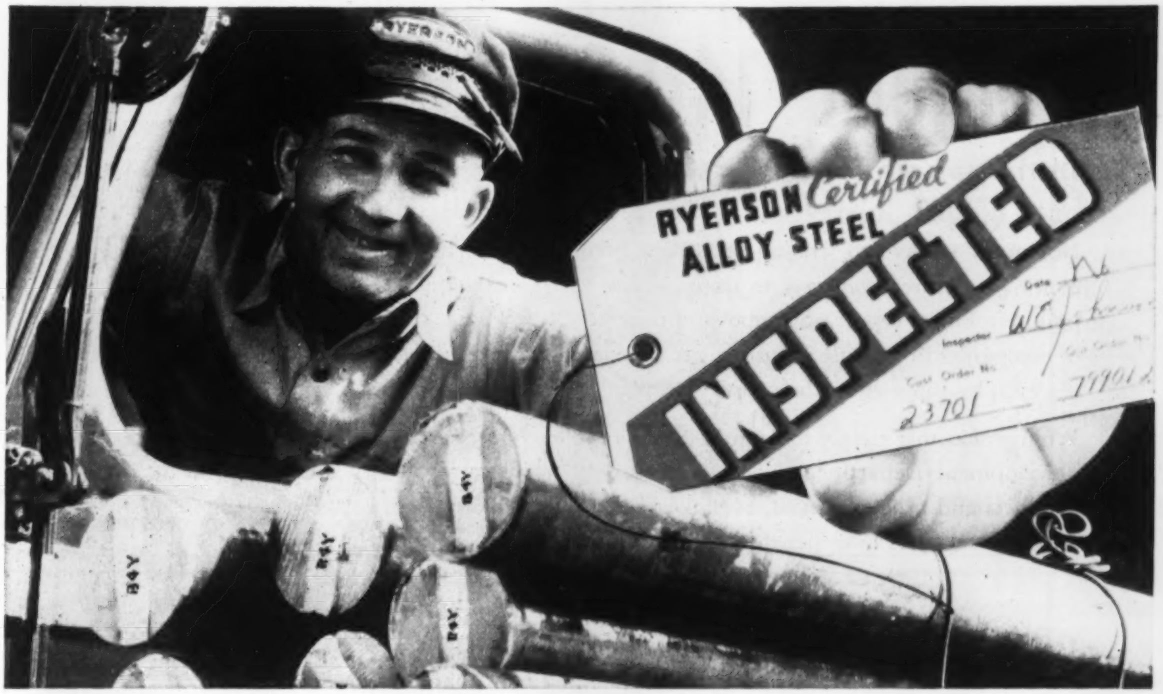
HEALTHY INDEPENDENCE: Before we conclude this discussion of the advantages of diversification, it may be well to emphasize for the benefit of manufacturers in many branches of the metalworking industry an important by-product of Pressed Steel Car's action in broadening its base. Before the company began to diversify, its bid to a railroad desiring to purchase freight cars was tempered considerably by the status of the company's order books. If P.S.C. needed business badly it might submit a bid that would keep the plant operating but would yield little, if any, profit and might entail an actual loss. With diversified products, the company now can afford a healthy independence in its approach to the freight car market. It can turn down unprofitable business at will.

The books testify to the wisdom of this independent policy. In recent years the company's percentage of freight car volume has declined, but its profit on the much lower volume has risen.

* * *

DOERS ARE OPTIMISTIC: One of the queer things about current statements as to the outlook of business is that the closer one is to the industrial scene, the more optimistic he is about the future trend of business. Most of the persons who are pessimistic about the business outlook are politicians and others who are far removed from the industrial front.

In this week's issue, spokemen for the industrial supply houses (p. 67), which are in an especially good position to feel the pulse of business, are quite optimistic about 1954. The tool and die people (p. 69) and the manufacturers of plastics (p. 70) are confident in regard to the future. Freight car loadings were up in the week ended Jan. 30. In Cleveland new unemployment claims have dropped off each week for the last three weeks. These are encouraging signs.



danger of wrong alloy *eliminated* by Ryerson 8-step quality control

Two bars of steel may look alike—may actually have been bought as the same alloy—but even seemingly identical bars may vary widely in analysis and performance. To remove completely the risk of getting steel that will not perform as you expect it to—we developed the Ryerson Certified Alloy Plan.

Under this unique Ryerson system of quality control, your protection begins with the careful selection of heats to be carried in stock. Next, we verify the analysis of each selected heat. Then, after spark testing to guard against mixed steels, we permanently identify each bar with a stamped heat symbol and color marking. Meanwhile, we test a sample of every heat for hardenability and interpret the test results for you.

Finally, before these selected steels are shipped, a thorough inspection is made to see that every step in the control plan is followed. Only then, after every detail has been double-checked, is your order of Ryerson alloys approved for delivery. And with your shipment you receive a certificate providing complete test data to prove quality and guide your heat treatment.

You pay no more for Ryerson Certified Alloys, but they will prove real money-savers for you. To get these controlled-quality steels promptly—just call your nearby Ryerson plant.

RYERSON CERTIFIED STEELS

PRINCIPAL PRODUCTS: CARBON, ALLOY & STAINLESS STEELS—BARS, STRUCTURALS, PLATES, SHEETS, TUBING, MACHINERY & TOOLS, ETC.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Project 140.20.2

in the search for new and better steels and steelmaking methods

Not many weeks ago, Inland released a book reporting new findings in the continuing search for ways to improve the corrosion resistance of Tin Plate. The highly technical report was important to relatively few men, restricted to a handful of companies in a single industry. Yet it represented several years' research by top men in the country.

We mention this merely to remind you that Inland's Research and Development Department is constantly probing for improved products and processes. And, over the years, a great many Inland steel users have benefited.

SECTION 1

Corrosion Cells

INLAND

INLAND STEEL COMPANY

38 SOUTH DEARBORN STREET • CHICAGO 3, ILLINOIS

Sales Offices: Chicago • Milwaukee • St. Paul • Davenport
St. Louis • Kansas City • Indianapolis • Detroit • New York

Principal Products: • Sheets • Strip • Plates • Structural Shapes
Bars • Tin Mill Products • Rails and Track Accessories • Coal Chemicals

DOLLAR SALES

Industrial Supply Houses

1954	
1st half	$2.1 billion
2nd half	2.3 billion
	4.4 billion
1953	4.7 billion
1952	4.5 billion
1951	5.0 billion

Business Morale: Still High

Industrial supply men, a bellwether group, report no undue pessimism among customers. Distributors themselves are optimistic as they keep in step with the times

HOW'S INDUSTRY'S MORALE now that business is down nearly 5 per cent from a year ago?

STEEL queried industrial supply men on the matter because they're in a bellwether activity. They sell hundreds of items—from grinding wheels to instruments, from mechanical rubber goods to fasteners—to thousands of companies in every metalworking cranny.

Diagnosis — The results: Industrial suppliers themselves are generally optimistic, and they report no undue pessimism among their customers. One East Coast supplier points out: "This business downturn was widely and accurately predicted four to six months ago in the business press and other places. You would have to be illiterate to have been caught by surprise."

"Any company that has taken or is taking intelligent action to meet today's changing conditions will be in good shape," says an Alabama supplier. E. A. Duffy, vice president of the Pittsburgh industrial supply firm, Chandler-Boyd Co., reports: "For three or four months we have concentrated on adjusting inventories to suit customers' requirements and have succeeded in improving deliveries considerably."

Quick Change—In the past six months, supply houses have changed inventory and selling practices markedly. "Deliveries are much improved, many houses are tending toward specialization, we're giving better service and pushing harder for sales," comments R. Kennedy Hanson, general manager, American Supply & Manufacturers Association, Pittsburgh.

As a result of the changes, industrial supply sales will be $4.4 billion in 1954 (see the chart), compared to $4.5 billion in 1952 and $4.7 billion in 1953. Most distributors say their volume is 10 to 15 per cent lower now than last year at this time, but they expect a 5 to 9-per-cent upturn in the second half when customers' inventories are depleted.

Customers Benefit — Improvements in supply service take the form of quicker delivery, rounding out inventories and increasing specialization. "Deliveries on many items required six months a year ago. Now nearly all standard items are available in 30 days," says T. M. Ballantine, assistant manager, supply department, Strong, Carlisle & Hammond Co., Cleveland. "Most orders for standard items in normal quantities can be filled from stock. We can fill the balance quickly from incoming shipments," Mr. Ballantine continues.

Some supplies are still not freely available, but the list is diminishing. These include seamless tubing for oil country use, precision tools, some machine tools and valves. Delivery time for these items promises to improve. An eastern supplier adds that seamless carbon steel tubing was ordered 60 days in advance of delivery one year ago. Now delivery is made within one month of the order.

Changing Policy—Industrial supply houses are making inventories more serviceable, in another step toward better operations. Stocks reflect actual demand. Inventories are analyzed closely to weed out marginal, slow-selling items.

With many manufacturers working on 30-day inventories, suppliers must be geared for quick delivery. "Stocks are not necessarily larger," Mr. Hanson points out. "Where a house may have had ten electric tools and no saws last year, the balance will now be even, in line with demand."

Specialists—Growing numbers of

supply houses are concentrating on a specific industry to improve their competitive position. In expanding industries such as power transmission, increasing numbers of specialty houses furnish a full line of equipment. Some new general business is coming in, too. W. E. Lowells, general sales manager of Cleveland Tool & Supply Co., Cleveland, says, "We find that manufacturers who preferred to sell direct last year are now finding that costly direct selling doesn't do the whole job. For better, cheaper and wider distribution, many manufacturers are turning to the industrial supply house."

When heavy competition loomed on the horizon last year, suppliers changed their selling philosophy. An Illinois supplier remarks, "For several years our sales force didn't know what real selling meant. Now we're making more direct calls, going after smaller orders and giving slow salesmen inside jobs."

Paying Freight—Effects of this competition are felt in absorption of freight and transportation costs. Few prices have been lowered for competitive reasons, but supply houses are generally paying for shipments to outlying districts. Result is that supply houses are studying means of lowering freight costs.

A West Coast industrial distributor says: "Yes, our volume will be down a little this year, but our earnings situation will still be satisfactory. Because we so frequently mirror what's happening in industry generally, I think our prospects augur well for the economy."

Design for Tool Sales

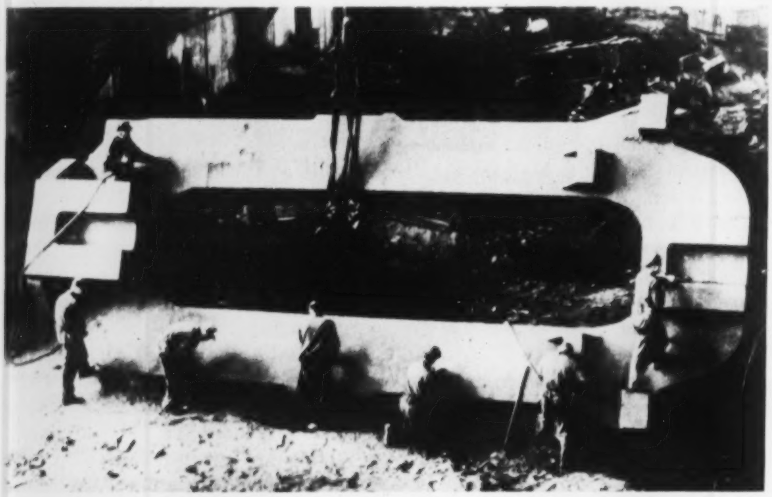
Machine tool sales programs of more aggressive salesmen and easier financing comprise but one plank in the tool builders' platform for meeting growing competition.

Much of the sales burden will be taken by other major sales supports—new and improved designs of the machine tools themselves.

As a case in point, Warner & Swasey Co., Cleveland, has announced a new line of heavy-duty saddle turret lathes. New machines follow the company's present 1A, 2A, 3A and 4A in size. But they're equipped with higher horsepower (up to 75 hp on the 4A); increased range of spindle speeds from conventional 12 to 16 (32 with a two-speed motor); direct-acting hydraulic clutches that are free from mechanical linkage; and direct-reading preselectors.

In all except the 1A model, headstock gear shifting is done by hydraulic pistons. The 1A changes speeds through hydraulic clutches on the gear train.

Warner & Swasey's new line will be ready for delivery during 1954. Production of present models will be continued.



Like Ants Picking Elephant Bones

Workmen at Loewy-Hydropress Inc., New York, clean a huge casting that will form part of the housing for a heavy breakdown and plate rolling mill Loewy's building for the McCook, Ill., plant of Reynolds Metals Co. Steel poured for the casting weighed 390 tons. The mill is scheduled for completion late this year

Good Year Ahead

Congressmen told that strong consumer demand should reverse current dip by mid-1954

CONSUMER demand continues strong and should, by the middle of 1954, reverse the present decline in the nation's economy. That was the gist of testimony by a panel of economists before the Congressional Joint Economic Committee last week.

But the experts caution that the upturn will not carry to the level established in 1953. They predict consumer spending in 1954 will probably average 5 to 10 per cent below the record highs of 1953, but will be on a par with the 1952 level.

Expectations — A. W. Zelomek, president of International Statistical Bureau Inc., New York, told the congressmen, "I don't agree with the prophets of doom." Gerhard Colm, chief economist for National Planning Association, Washington, said the economy must keep growing and private purchases should go up $20 billion this year if America is to keep at full-scale production.

Mrs. Aryness J. Wickens, deputy commissioner of the Bureau of Labor Statistics, told the committee to look for "some further increases in hourly rates of pay in 1954 and a generally stable price level." Rensis Likert, director of the institute for social research at the University of Michigan, said an October survey disclosed that consumers are "relatively optimistic about the next 12 months."

Going Down?—George P. Hitchings, manager of Ford Motor Co.'s economic analysis department, said durable goods sales were abnormally high last year and may drop 5 to 10 per cent this year. Even so, he believes, they should be "at least as high as in 1952."

Gordon B. Hattersley, vice president of Sears, Roebuck & Co., told the congressmen that inefficiencies in production and distribution developed during the postwar boom. If business concentrates on eliminating them and reducing prices, he believes, 1954 can be a "year of high activity, even though below recent peak levels. The wants of the public are literally endless."

NTDMA

Civilian orders are replacing defense contracts as . . .

Die Shops Set Pattern for Good Year

Backlogs are down; defense business too. Some skilled workers are drifting. But tool and die men expect dollar sales to drop 10 per cent at most from peak year of 1953

"I THINK business will be about as good this year as last, though a lot of people are still worrying about it and crying some."

That's the judgment of one midwestern tool and die shop owner. His prediction is backed by the consensus of a STEEL survey which showed contract tool and die shop management this year expects dollar sales anywhere from equal to 1953 to 10 per cent under last year. Even the worst outlook is not alarming, however, since the 10 per cent drop is based on 1953, the best year contract tool and die shops ever had including wartime boom years.

Sum It Up—When the tallies are all in, dollar sales for the 2500 to 3000 contract tool and die shops in the country will amount to about $800 million for 1953.

The moderate drop expected in dollar sales testifies to the underlying health of the civilian economy, too. In January, 1953, tool and die shops were doing about 50 per cent in defense business; now they're doing about 20 per cent.

Slow Start—Cause of some of the worry and tears among a few tool and die men is the hesitation with which their civilian customers approached 1954. Automotive retooling and die work for 1955 models was very slow in November and December and into January. Appliance customers had cancelled one or two big pieces of work as late as January.

But industry has apparently shrugged off its self-hypnosis about an imminent depression and die ordering is beginning to open up. Typical work week in Detroit is about 50 hours, ranging from 40 to 58. Appliance customers are beginning to let jobs which have been hanging fire from late in 1953. Tool and die students of business activity feel that the necessity of keeping up competitively will mean a lot of new models and retooling and, consequently, tool and die work. Take color television, for example. That alone presents many new tooling opportunities.

Banner Year — Though dollar sales will not slump alarmingly, 1954 will not be just another year for tool and die shops either. For one thing backlogs are well below what they were a year ago. In many cases the backlog has disappeared. Shops can start to work on a new order as soon as it's placed. Even some larger shops report they're down to a one-month backlog, after having had a 4 to 6-month backlog for the past 7 years.

For the benefit of the customer who wants a rush-rush job, it should be said: Many tool and die shops do not fit the general picture above and are still as busy as ever. One owner told STEEL: "We've quoted 4 to 6 weeks since we've been in business (1949). We're working 52 hours a week, same as we've been doing right along." Other shops are turning away business. Generally, though, backlogs are down more than they've been at any time since 1946.

More Changes — Work weeks, generally, are below 50 hours, some as low as 40 hours. That's a big change after years of 55 to 60 hours a week. Cutbacks in work time have brought another surprising development. Skilled and semiskilled tool and die men are in a few cases drifting around looking for work with a shop still going full tilt. The number of such drifters is small; the novelty of it is that there are any at all.

Tool and die men are not deceived by that temporary easing of labor supply. Drive for apprentices continues unabated. Ratio of apprentices to journeymen has been changed from one apprentice for 15 journeymen to one apprentice for 8 journeymen in Detroit. Pennsylvania Tool & Mfg. Co., York, Pa., in co-operation with other similar companies and one of the local high schools, has worked out a special training program. An apprentice spends two weeks in the plant and two weeks in high school each month during the school year; then spends full time in the plant during the summer vacation. Barth Corp., Cleveland, keeps 12 to 15 men in its apprentice training program almost all the time, says Al Combs, the firm's controller.

A Little Different — It won't quite be business as usual for the tool and die shops this year as a result of these conditions. But it will still be a good year.

Machine Tools: Age Creeps Up

A change in depreciation laws to permit optional depreciation on new equipment is imperative to help eliminate obsolescence of machine tools in American industry. That's the opinion of Tell Berna, general manager of the National Machine Tool Builders' Association.

In a recent speech before the National Metal Trades Association, he charged that the metalworking industry is growing more inefficient each year. He pointed out that over half of the machine tools in metalworking plants are inefficient producers; over 400,000 machines are 20 years or more old.

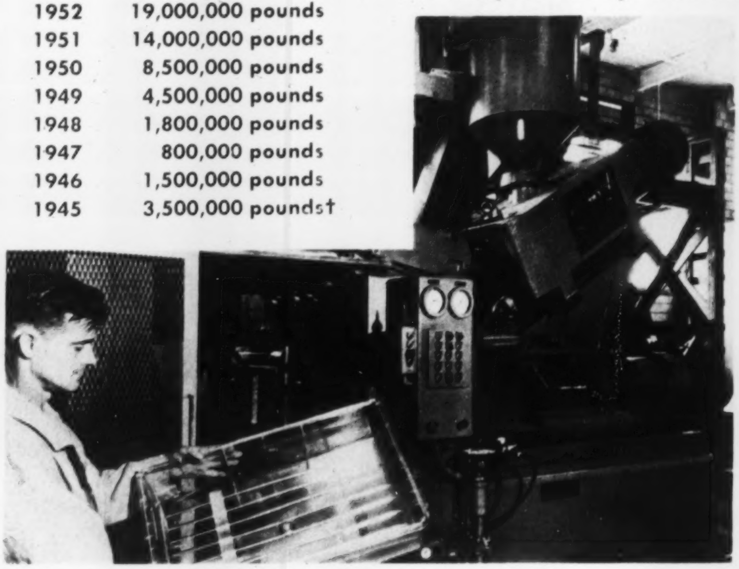
Auto Men Check L. A. Smog

Automotive industry "will do whatever possible to assist in the solution of the Los Angeles smog problem." So says John Campbell of the Automobile Manufacturers Association. He and ten experts from Detroit have spent a week here checking the effect of automobile fumes on the air.

Mr. Campbell urged continued investigation upon the Los Angeles County Board of Supervisors to determine the contribution to smog from automobiles, industrial installations and rubbish incinerators. He called for an immediate estimate of the facilities necessary to complete the research and assured officials that his industry would take needed steps in the right direction.

POLYESTER RESINS—
Consumption Leaps Ahead

1954	35,000,000 pounds*
1953	26,000,000 pounds
1952	19,000,000 pounds
1951	14,000,000 pounds
1950	8,500,000 pounds
1949	4,500,000 pounds
1948	1,800,000 pounds
1947	800,000 pounds
1946	1,500,000 pounds
1945	3,500,000 pounds†



* Estimate. † Entirely for military use.
Source: Society of the Plastics Industry Inc

Watson-Stillman

Opportunity Knocks in Reinforced Plastics

Reinforced plastics firms are entering mass production stage and turning to machines to help boost output. That means a growing metalworking market

RAPID GROWTH in use of reinforced plastics holds distinct promise of expanding metalworking's markets among plastics-forming firms.

Thus far, use of reinforced plastics has not promoted sizable machinery and equipment markets because so much of the output has been hand layup work. But today's growth in reinforced plastics, charted above in consumption of its major raw material, reflects entry into mass production markets. The further reinforced plastics go into mass produced items, the further producers will get from hand layup work and the greater will be the market for products of the metalworking industry.

Look Ahead—Take the case of the reinforced plastic body for Chevrolet's Corvette sports car. Until recently that body was produced by hand layup—glass mats or other reinforcing material laid on inexpensive open forms and the mats covered or impregnated with plastic, later air dried or lamp dried. Now the Corvette body will be made on presses through the matched-metal mold process. That will require presses and cast iron molds.

Speakers at the ninth annual technical and management conference of the Reinforced Plastics Division, Society of the Plastics Industry Inc., indicated this break into mass production would be carried forward. Research done in the sports car body field will be translated during 1954 into trucks, farm equipment and probably station wagon components.

Shaping Things To Come—Currently the extrusion and injection molding segments of the plastics-forming industry are the better metalworking market because they *must* use presses and machinery. But technology, as well as mass production, may improve metalworking's role in reinforced plastics. Besides the matched-metal mold process, one company is experimenting with the extrusion of reinforced plastics. Admittedly, still in the developmental stage, it points to another field for metalworking's products.

Other equipment used by plastics-forming companies includes ovens, preforming equipment, grinders, glass cutters and molds.

Gas Turbine for Ships Sought

The Maritime Administration has invited proposals for the development and furnishing of a gas turbine power plant for a Liberty Ship. The action is the first following the administration's announcement of a three-point program designed to boost activity of the nation's shipyards (see STEEL, Feb. 8, p. 72).

Louis S. Rothchild, administrator, says the power package of advance design will be available to industry for new ship construction and to the government for modernizing reserve fleet vessels in an emergency.

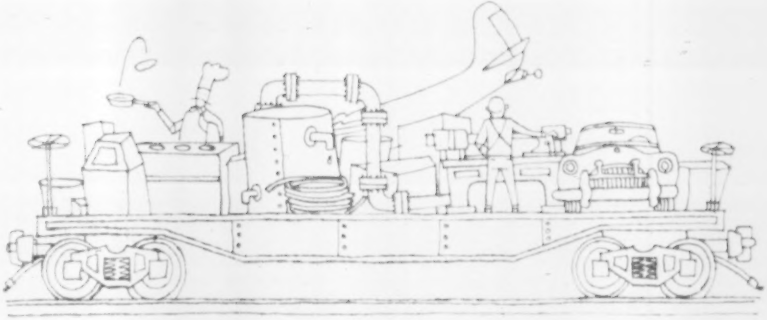
These 12 companies have been invited to participate in the gas turbine development: Allis-Chalmers Mfg. Co., American Locomotive Co., Baldwin-Lima-Hamilton Corp., Cooper-Bessemer Corp., De-Laval Steam Turbine Co., Electro-Motive Division of General Motors Corp., Elliott Co., Fairbanks Morse & Co., General Electric Co., National Supply Co., Nordberg Mfg. Co., and Westinghouse Electric Corp.

ODM Eases Write-Off Policies

Two amendments to regulations governing the issuance of certificates of necessity are announced by the Office of Defense Mobilization.

The first covers the "predetermination" requirement which made certain expansions ineligible for certificates if construction had been started before the certificate was issued. This provision has been eliminated.

The second change permits a taxpayer who has expanded a facility after the goal had been closed to file for a certificate within 30 days after the goal is reopened.



Diversification Pays Off for Pressed Steel Car

FROM FREIGHT CARS to stainless steel cook ware is quite a jump. But for Pressed Steel Car Co. Inc., Chicago, the diversification leap made the difference between red and black ink on its profit and loss statements.

One of the nation's oldest and biggest independent freight car builders, Pressed Steel Car made practically nothing for 50 years but freight cars. However, it was not immune to the depressions that hit the industry with fair regularity; and in 1948, under the new leadership of President John I. Snyder Jr., it set out to broaden its base within the framework of steel fabrication.

The Growth—Since then it has acquired (through outright purchases or exchanges of stock) five new divisions that turn out petroleum equipment, engine lathes, aircraft parts, farm holding tanks, industrial and residential steel tanks, electrical conduit fittings, stainless steel cook ware, automobile bumper guards and accessories, and waste receptacles.

Furthermore, the company now operates one of the largest tank and armored vehicle depots in the United States at Hagewisch, Ill., and manages and operates a government ordnance plant at Rockford, Ill.

Thus, Pressed Steel Car no longer is dependent on erratic freight car sales. It still builds freight cars—it shipped about 4200 cars last year for a gross volume of approximately $30 million, placing it fifth in the industry. But where six years ago this freight car business would have represented the company's total sales, last year it represented less than 35 per cent.

Independence—For the first time the company can afford a healthy independence in its approach to the freight car market. It is turning down unprofitable business that it used to accept only to keep its plants operating. In the past couple of years its percentage of the industry has declined, while its pretax profit on freight cars, on a much lower volume of cars shipped, has risen.

Of the new divisions established, the most important by far is Axelson Manufacturing, a 62-year-old West Coast producer of oil well pumping equipment, engine lathes and aircraft landing gear components. In 1952, the year Pressed Steel acquired the organization, Axelson sales jumped to $20 million and its profits to $2 million before taxes. This compared with its annual sales average of $11 million and average pretax profits of $1.2 million for the years 1942-1951. In 1953 its sales hit almost $25 million and its pretax net $3 million.

Volume Doubled—Other divisions are doing well, too, as reflected by the establishment of a record sales volume for Pressed Steel last year of better than $90 million, more than double the average annual volume over the past five years. Its net income after taxes in 1953 is estimated at more than $2.5 million compared with $1.9 million the preceding year.

In 1950 when freight car business was in one of its dull streaks (and the year before Pressed Steel's diversification program really began paying off) the company sold only 780 freight cars, grossed $16.8 million and lost

$901,000. Actually, in the past eight years the company wound up in the red three times—in 1950, 1948 and 1946. But 1950 was the last; diversification has changed the color of the ink.

Titanium Goal Upped by ODM

The "boost titanium capacity" movement in Washington gathered more muscle this week. Office of Defense Mobilization set an interim goal of 37,500 short tons for facilities for melting titanium sponge and scrap into titanium ingot by 1956.

The Senate Subcommittee on Domestic Ores (see STEEL, Feb. 8, p. 172) is calling for a 150,000-ton annual capacity for the military alone. Paradoxically, titanium producers currently have more capacity available for finished products than they have orders for the first half of the year (see STEEL, Feb. 8, p. 69).

Melting capacity of the domestic industry today is about 7680 tons annually, with four melters currently planning expansion amounting to about 4200 tons more. ODM officials are reviewing the situation, and a new goal will probably be set upon completion of the study.

ODM last week closed several goals including: Abrasive products, antifriction bearings, carbon electrodes, condensers, continuous galvanized sheet and strip, crawler tractors, dies, jigs and fixtures, manufacturing facilities for elephant tools, friction bearings, gears and gear drives, machine tools, mechanical power transmission equipment, metal cutting tools, miscellaneous metalworking equipment, precision and large size fasteners, presses and forging equipment, pumping machinery, precision screw machine products, special components and industrial valves and fittings.

ODM goals still open include military aircraft, debarking equipment, ordnance facilities, railroad terminal and road facilities, military vehicles and engines, equipment for refrigerated storage, warehouses, airport facilities, motor truck terminal and repair facilities, inland waterway terminal facilities and port facilities (facilities embrace both structures and equipment).

Aircraft Earnings: Too Low

Curtiss-Wright points out that leading aircraft companies' return on sales last year was only 1.7 per cent, compared to 6.1 per cent for auto firms

AIRCRAFT companies should be allowed greater earnings to provide needed production capacity in emergencies, claims Roy T. Hurley, chairman and president, Curtiss-Wright Corp.

The industry "wants no special subsidies or handouts, but deserves the same rights, responsibilities and rewards as other industries," Mr. Hurley said last week. He pointed out that net return on sales by leading aircraft companies in last year's first nine months was only 1.7 per cent, while auto companies earned 6.1 per cent of sales and leading manufacturers 5.9 per cent; in the decade since 1943 leading aircraft companies have grown 59.4 per cent while auto companies have expanded 96.7 per cent and leading manufacturers 93.6 per cent.

For the Emergency—Answer to emergency problems, he believes, is adequate plant capacity. For example, a plant on a one-shift 40-hour week could be expanded 360 per cent with a six-day three-shift operation.

To "bring recognition of what's wrong and an understanding of it," Curtiss-Wright added this lesson in aircraft economics to its four-day presentation of "Airpower for the Next Ten Years" display at New York's Waldorf-Astoria. Assembled for showing to industrial leaders and the public were these company-built products: Turbo-compounds (presently offering cruising speeds of 330-365 mph, promising 425 mph in the near future), turboprops (combining 800 mph top speed with great load lifting ability), turbojets (featuring speed up to 1500 mph, rather than range), ramjets (1500-3500 mph) and rockets (3500 mph plus).

THE TURBOPROP
. . . great lifting ability

Thermal Barrier—The latter two units head into the thermal barrier, which aircraft men find presents more difficulties than the sound barrier. Also on view were hollow steel propeller blades made by the hot extrusion process, an electronic flight simulator for pilot training, and a TJ-32B two-spool turbojet rated in the 9000-pounds of thrust class, which is similar to the hush-hush J-67 engine under development.

While military planes of the next decade must fly above the sonic barrier because that's where the competition is, commercial planes will fly below it, declared Mr. Hurley. Below the speed of sound, propeller-driven planes are more efficient, Curtiss-Wright maintains. Citing problems of passenger comfort, equipment and operational cost and additional ground facilities needed, he said that over three times as many commercial planes could be equipped with his company's turbo-compounds for the dollar outlay required for turbojets.

Hammering on the economy theme of turbo-compounds (planes using them were dubbed "Flying Scotchmen"), the company reported 24 commercial airlines flying them today. The field of greatest growth in commercial air travel over the next decade, Mr. Hurley believes, lies in the 90-minute intercity flights at 375-400 mph using twin-engine planes.

Nickel Expansions Set

Nicaro Nickel Co. and Nickel Processing Co. will build up refining capacities in Cuba

TWO COMPANIES have the green light from the government to increase their nickel refining capacities.

Nickel Processing Corp. will increase capacity 75 per cent at the government-owned plant in Nicaro, Cuba, which NPC has been operating since 1950. Office of Defense Mobilization allocated $43 million to the project. National Lead Co., which owns a majority share of Nickel Processing Co., will take a leading part in the expansion.

Measuring Up—Last year Nickel Processing's plant turned out about 28 million pounds of nickel, and in the fourth quarter output ran at an annual rate of 29.5 million pounds. With this latest expansion, output could reach 51.5 million pounds or more annually.

Nicaro Nickel Co., Freeport Sulphur Co. subsidiary, received a large certificate of necessity for construction of nickel and cobalt refining facilities at Moa Bay, Cuba, and near New Orleans. Nicaro's certificate amounted to $55 million with 80 per cent allowed for fast write-off.

Nickel in Reserve—These developments throw the spotlight on the nickel reserves in Cuba, now thought by some to be the largest in the world. Freeport Sulphur has located and owns ore deposits in Cuba estimated at 40 million tons with 1.45 per cent nickel and 1.4 per cent cobalt content.

Freeport already has a small pilot plant in operation refining nickel by high temperature leaching with sulphuric acid rather than ammonia (see STEEL, Dec. 28, p. 96) and has plans for a larger, 50-ton-a-day pilot plant.

Falconbridge Plans Expansion

A $42-million expansion program to double its nickel production is being undertaken by Falconbridge Nickel Mines Ltd. (STEEL, Jan. 18, p. 110). Plans call for increase in capacity to 30,000 tons a year.

Company will build a nickel refinery on a 300-acre site adjacent to Port Colborne, Ont., along the route of the proposed St. Lawrence Seaway, with capacity of 7500 tons yearly to treat its matte in Canada.

Handy Hedgehog

Thousands of steel quills applied by Nelson stud welding guns grip insulation on the steel reactor sphere at Knolls Atomic Power Laboratory

Falconbridge also is increasing size of its Norway refinery by 50 per cent to capacity of 22,500 tons yearly. Expansion results from arrangements made in March, 1953, whereby Falconbridge contracted to sell up to $135 million in nickel (100,000 tons), copper (26,000 tons) and cobalt (1000 tons) to the United States government.

More Fast Write-Offs

Besides the largest certificate of necessity issued to Nicaro Nickel Co., Office of Defense Mobilization issued several others to metalworking companies in the period from Jan. 14 to 27.

Among them were: Boeing Airplane Co., Seattle, $2.2 million for military aircraft, 60 per cent allowed; Bethlehem Steel Co., $2.2 million for shipbuilding facilities in Brooklyn, N. Y., 50 per cent allowed; Bethlehem Pacific Coast Steel Corp., $1.2 million, 65 per cent allowed, and $2.6 million, 50 per cent allowed, for steel production facilities at Vernon, Calif.; and Rem-Cru Titanium Inc., $170,000 for titanium mill product facilities at Midland, Pa., 40 per cent allowed.

Turned Down

The FCC denies a petition for exclusive frequencies for industrial radio use

PREMATURE and not warranted by the public interest, convenience or necessity—that's the decision handed to a committee on manufacturers' radio use in its petition to take some of the wraps off industrial radio.

The petition turned down by the Federal Communications Commission would have made exclusively available by reallocation 40 frequencies to proposed Manufacturers Radio Service, freed users from territorial or plant area broadcasting restrictions and established a rule structure that would permit point-to-point microwave systems. It was on the last point that FCC ruled industry premature.

Crux of the Effort—The petition was the work of a 57-member group of manufacturers, headed by Herbert E. Markley, Timken Roller Bearing Co., Canton, O. Although restrictions that prevent broadcasting outside an immediate plant area are obnoxious, real crux of the committee's effort was to establish its own radio service classification and get more frequencies for transmission.

Currently, industrial radio must share on an equal basis with farmers, contractors, miners, etc., that portion of the spectrum from 460 through 470 megacycles. The petition requested that bands 460 through 462 and 468 through 470 be allocated to a Manufacturers Radio Service.

Saturation—Industry's position is that the frequencies now available on a shared basis are nearing a point of saturation in many areas, particularly along the East Coast, in Pittsburgh, Cleveland and Los Angeles. For instance, in Pittsburgh a petitioner could get no assignment but the frequency allotted to U. S. Steel Corp., only 8 miles away. Normal range is about 20 miles, so this could result in annoying interference.

The FCC takes the view that "rigid subdivision of the spectrum into specific allocations for individual groups is a partitioning which is an obstacle to development of effective frequency use."

By E. C. KREUTZBERG *Washington Editor*

NLRB Chairman Voices His Policy: Public Interest To Be Paramount

CHARGES that the reconstituted National Labor Relations Board is interpreting the labor law one-sidedly in favor of employers bring this reply from Chairman Guy Farmer:

"I am aware that many think the board under the prior administration was pro-union. If that be true, let no one make the mistake of believing that this board will be pro-employer. If union or employer run afoul of our processes, I will endeavor to assure them fair play and equal treatment. But let it be clearly understood that the equipment in my office does not include a can of whitewash."

Undistorted View — To charges that the board is usurping the legislative function in its rulings, Mr. Farmer says: "We do not propose to alter the law, distort it, or give it strange and twisted interpretations so as to evade the will of Congress. Any party who violates the law, be it union or employer, must pay the penalty prescribed by law. No party, union or employer, need expect us to search out spurious interpretations in order to let them off the hook or declare valid conduct which is proscribed by law.

"But our enforcement of the law will not be ruthless and bureaucratic. While we are resolved to enforce the law, it is not our purpose to use it as a weapon to hound and harass our citizens. The law was enacted in the interest of the public, and we place the public interest above that of any special group."

More Clarification—Most of the current criticism stems from the new board's reversal of a number of the old board's decisions, particularly decisions which denied to the employer the right of free speech. In the Bonwit Teller case the old board held it an unfair labor practice for an employer to address his employees on company time and property about unionism unless he gave the union an opportunity to reply on his own time and at his expense. When the same question came up in another case, the new board reversed the Bonwit Teller decision by holding that "the plain language of the statute, reinforced by congressional intent, reserves to the employer the right to publicize his point of view to his employees so long as he does not threaten or coerce them."

GUY FARMER

. . . NLRB chairman shows his colors

The new board threw out the stipulation that the union had to be given an opportunity to reply on the employer's time and property. At the same time the new board ruled that neither an employer nor union should make a pre-election speech to employees on company time within 24 hours before an election. The latter rule, says Mr. Farmer, "leaves open to the union and employer all the usual means of communicating with employees, but it does give employees a breathing spell from last-minute blandishments at their work place."

Greatest Threat . . .

Mr. Farmer sees the Communist influence in labor unions as the greatest present danger to our industrial society. It is not easily dislodged. "We have seen," he says, "that Communist unions which are expelled by a national federation continue to live as separate organizations and are still able to muster rank and file employee support.

"We have instituted a policy of withholding certifications from unions whose officers have been indicted for making false affidavits to the board. We have also revoked certificates where officers have been convicted of filing false affidavits and where we have found that there was evasion of the affidavit requirements of the act. In this we have met some stunning legal setbacks and have twice been enjoined by the federal court." The board hopes the Supreme Court will sustain NLRB's right to deny its services to unions that flaunt the law. Failing action by the Supreme Court, it's hoped Congress will strengthen the law in this respect.

Back to the Bailiwick . . .

Finally, Mr. Farmer seeks a "gradual but nevertheless marked" withdrawal by the board from strictly local disputes. He doubts that Congress ever intended that the power and prestige of the federal government should be interposed in a dispute involving washroom attendants in Grand Central Station, a clerk in a grocery store, or a mechanic in a garage. These local disputes, he feels, should be settled locally, permitting the board to devote its time and the public funds "to the handling of cases where the national interest is truly involved." Out of its experience on a case-by-case basis, the board hopes to come up with a policy ruling which will define the area in which it will exercise jurisdiction.

NEW BAKER "Yardloader"

TRADE-MARK

4000 LB. GAS FORK TRUCK

COSTS ONLY $2985.00

Yardloader
Baker Lull

Priced about 25% under any other gas trucks in its capacity, the Yardloader now brings cost-saving fork truck operation within the reach of practically every company with yard-handling problems. Travel speed approaching 14 miles per hour, large pneumatic tires, exceptionally high ground clearance and oscillating trail axle make it the ideal truck for outdoor service over large unimproved or semi-improved areas.

Heavy-duty industrial engine of proven make, 4-speed transmission and extra-heavy drive axle assure ample power for top performance under any conditions. Hydraulic lift to 122 inches, automotive-type steer, convenient controls and excellent driver visibility are a few of the features contributing to safety and ease of operation.

Get all the facts—and save up to $1000.00 on your next gas fork truck.

Send in this coupon today.

THE BAKER-RAULANG COMPANY
1259 West 80th Street • Cleveland 2, Ohio

The Baker-Lull Corporation • Subsidiary, Minneapolis, Minn.
Materials Handling and Construction Equipment

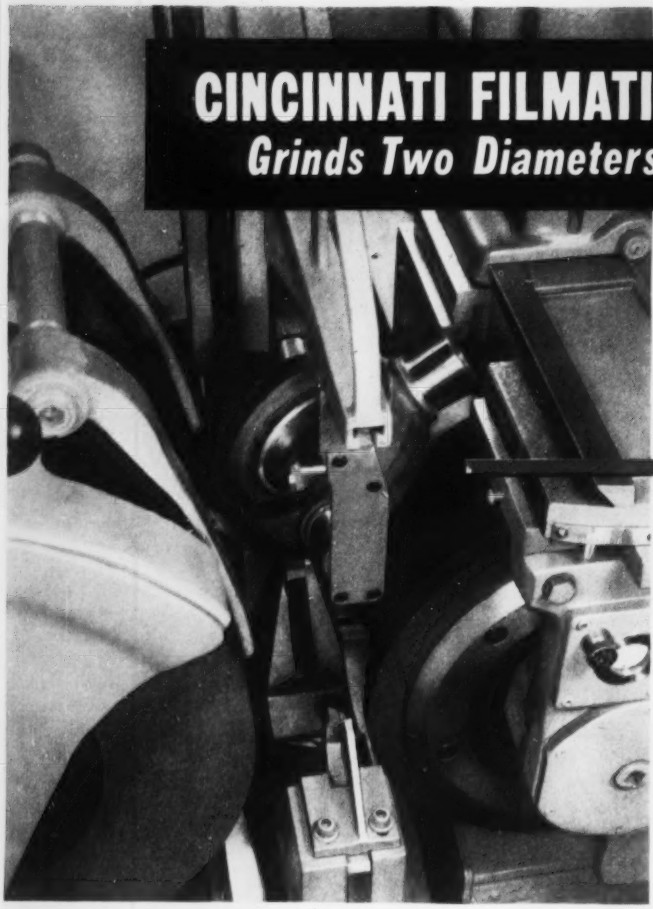
TO THE BAKER-RAULANG CO., 1259 West 80th St., Cleveland 2, Ohio

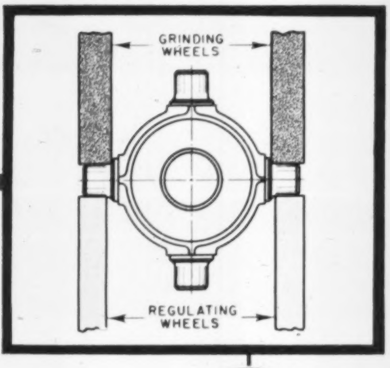
Please send me information and specifications on the new Baker EY-40 Yardloader which sells for only $2985.00.

Name________________ Title________
Company________________________
Address________________________
City________________ State________

CINCINNATI FILMATIC No. 3 CENTERLESS

Grinds Two Diameters Requiring 7X Swing





Drawing of part and arrangement of wheels. Two diameters are ground simultaneously, removing .015", .008" and .003" in three operations, on a CINCINNATI FILMATIC No. 3 Centerless Grinding Machine tooled up by Cincinnati Application Engineers.

No. 0
Catalog No.
G-576-2

No. 2
Catalog No.
G-611-1

No. 3
Catalog No.
G-570-3

No. 4
Catalog No.
G-538-2

No. 5
Data on
request

No. 6
Data on
request

New applications for CINCINNATI Centerless Grinders are always popping up. The latest is illustrated here . . . a two-wheel setup to grind simultaneously two trunnion diameters on universal joint spiders. Swing required for the center section is approximately seven times the ground diameters. ¶Cincinnati Application Engineers tooled up a CINCINNATI FILMATIC No. 3 Centerless Grinding Machine for the job. Equipment includes profile hydraulic truing units over the grinding and regulating wheels; special grinding wheel guard and regulating wheel housing to permit loading; automatic infeed attachment; hydraulically operated loading fixture; manually operated grinding wheel spindle reciprocating attachment. With the latter attachment, the operator touches up the shoulder and radius adjacent to the ground diameters. ¶You probably have precision grinding operations in your shop that could be centerless ground on a CINCINNATI at lower cost. It will pay you to reconsider your present methods, and our Application Engineers will help you decide.

Cincinnati Offers the Only Complete Line of Centerless Grinding Machines

FILMATIC

CINCINNATI GRINDERS INCORPORATED
(Subsidiary of The Cincinnati Milling Machine Co.)
CINCINNATI 9, OHIO

CINCINNATI

CENTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES
CENTERLESS LAPPING MACHINES • MICRO-CENTRIC GRINDING MACHINES

CINCINNATI

CINCINNATI FILMATIC No. 3 Centerless Grinding Machine. You may obtain complete specifications by writing for catalog number G-570-3.

Belgian Exports Shift

Tonnage of Belgian exports went up, dollar value went down in 1953

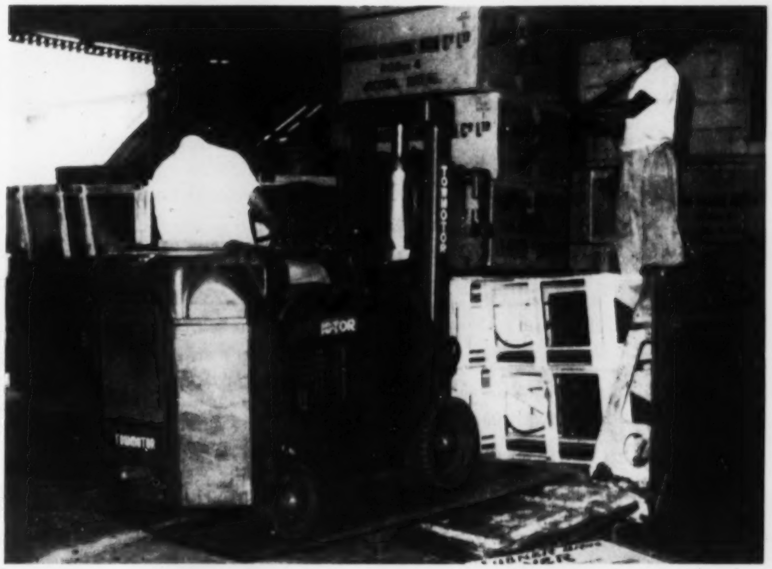
BELGIAN metalworking manufacturers are pinning their hopes on implementation of the freer trade recommendations of the Randall Commission (STEEL, Feb. 1, p. 55).

It's easy to see why. Belgium traditionally exports about 40 per cent of its total industrial output. Furthermore, while tonnages of Belgian exports steadily increased during 1953, dollar value of total exports steadily decreased, giving a monthly average of $180 million in 1953 compared with a monthly average of $200 million in 1952.

Where It Hurts—Behind that decrease in dollar value of exports was a decline in the movement of finished metalworking goods. Value of finished metalworking products represented only 11 per cent of total Belgian exports in 1953 compared with 16 per cent of the total in 1952.

New orders coming in in late 1953 indicate the decline of metalworking product exports will continue in early 1954. FABRIMETAL (Belgian metalworking combine) reports new export orders for November, 1953, were $22.4 million, well below the 1951 average of $37.6 million and the 1952 average of $32 million.

Change Directions—The hope is that U. S. action for freer trade will either directly or indirectly stimulate Belgian exports of processed metalworking goods, so important to dollar sales, to balance the current trend toward low-dollar-per-ton exports such as coal, cement and bricks.



Towmotor Trucks Nip a Bottleneck in South Africa

Durban Falkirk Iron Co. Ltd. had a serious handling and storage problem. In addition to making coal and electric stoves, iron cooking pots, sanitary ware, and agricultural implement parts, it was one of the largest foundries in Natal, South Africa. Native labor couldn't handle shipments fast enough; storage was overflowing into production areas. Solution: The company installed Towmotor lift trucks, speeding deliveries and doubling storage space through high-stacking

American Steel for India

India's farm equipment makers, railway and construction industries will be the principal consumers of the 200,000 tons of steel to be provided in 1954 under the U. S. technical co-operation program for India.

About 40,000 tons, or 20 per cent, of the steel is earmarked for agricultural and rural development uses: 23.5 per cent to shipbuilding, hospital equipment, pipes, tubes, industrial machinery, oil drums and containers; and 43 per cent to railway car building and other railway requirements.

U. S. Exports Off Slightly

Preliminary Commerce department figures show U. S. exports for 1953 totaled $15,694 million, including $3503 million in military aid shipments, and general imports totaled $10,877 million. Excluding the military aid shipments, U. S. exports of $12,191 million are about 8 per cent below the 1952 level.

British Steel Exports

The British have been doing quite well on export markets without greatly expanded East-West trade. British iron and steel exports amounted to 2,903,293 tons in 1953, about 15 per cent of the total output and an increase of 154,000 tons over 1952. The British also exported 302,000 cars and 111,300 commercial vehicles with a total value of $840 million in 1953, slightly less than in the preceding year.

Signed But Not Delivered

Britain's government still must approve the $1 billion in goods destined for Russia

THE $20 MILLION in firm contracts which a British trade mission brought back from Peking, China, last year was eclipsed by the recent Russian $1.1-billion purchase order given another British mission two weeks ago.

The Russians want to buy cargo ships, fish carriers, whalers, power equipment including complete power stations, forging and pressing equipment, machine tools, textile and food processing machinery and railroad equipment.

A Catch—One thing to remember, though: Because Russia has given the British trade mission orders doesn't mean that the Russians will get everything they want to buy. As of November last year, nearly $11 million out of a total of $20 million worth of goods contracted for in Peking still awaited export licences from the British government.

It remains to be seen how far Britain will take the currently-offered bait.

Nine Ways To Reduce Labor Turnover

1. Place greater emphasis on your interview technique.
2. Meet or improve upon wage scales, working conditions and fringe benefits prevalent in your area and industry.
3. Place employee on a job equal to his abilities, among associates with whom he has something in common.
4. Show employee that he's important because the work he does is important.
5. Adopt a fair promotions policy so that employee feels he has advancement opportunities.
6. Develop the spirit of teamwork and sense of belonging among employees.
7. Take an interest in each employee as an individual.
8. Investigate all separations. Use the exit interview to discover company shortcomings.
9. Be alert to turnover warning signals, such as declining production rates.

EMPLOYMENT OFFICE
WANTED
PATTERN MAKERS
KELLER OPERATORS
LATHE OPERATORS
TEMPLATE MAKERS

Cut Labor Turnover Costs

When employees do most of the picking, turnover is high. More normal labor market plus lessons learned in abnormal years will help reduce costs during 1954

THREE BRICKLAYERS working side by side were asked: "What are you making?"

Said Bricklayer No. 1: "A buck seventy-five an hour." Bricklayer No. 2 replied: "I'm building a wall." The third looked up proudly. and said: "We're building a beautiful cathedral."

Old, But Good—"It's an old story of where to expect labor turnover," a Midwest personnel executive points out. "But it's one we keep in mind constantly in our efforts to keep labor turnover at a minimum."

Labor turnover is expensive. Automakers (see STEEL, June 29, 1953, p. 61) estimate that each "quit" and "discharge" costs them $100, which means the auto industry's price tag on 1952's labor turnover approached the $21-million mark. A New England manufacturer pegs his turnover cost at over $300 per man. With more and more cost-cutting avenues being sought today, management can't afford to overlook the hidden costs of labor turnover.

Postwar Turnover High — In a tight labor market, such as has been experienced in the eight postwar years, labor turnover is high because the employee is doing all of the picking. But the situation brought home to many employers some pointed lessons which will prove their value on the profit and loss statements as the competition tightens.

Basic in meeting the turnover problem is the interview. "We place personality and disposition ahead of job skills in most cases in our interviews," one personnel director states. "We can generally train a man to our operations, but it's tough to change his personality once he's hired. We pay special attention to his family background, his average time spent on other jobs and the reasons given for leaving. No matter how well he can perform his job, if he can't get along with his supervisors and associates the whole department will suffer."

The Uncertain Ones — There are turnover factors, too, over which management has little control. Single women get married; married women leave to start families. A man and wife may take employment just long enough to save the down payment on that "40 acres across the flats down home." Transportation problems often cause an employee to leave. These and similar situations should be considered in the interview.

Once an employee is hired it becomes an inplant problem to keep him. Harris-Seybold Co., Cleveland, has a 30 and 60-day progress report system to help get new employees adjusted. Foremen and supervisors rate a new man according to job skills, attitude toward job, ability to get along with associates and whether he shows signs of continuing to improve.

The Base—Wages, working conditions and fringe benefits are generally not the chief reasons an employee leaves his job, according to most companies contacted by STEEL. It is emphasized, however, that they are necessary to compete in the labor market in a given area or industry. "You build your labor relations using these factors as a base," one personnel director states.

Turning from his story about the three bricklayers, the Midwest executive related a problem his company had in its foundry. Good molders were not staying on the job, although the pay, working conditions and supervisory staff were good. Big drawback was monotony, and little could be done to alleviate it. But the company found the answer in education sessions employing movies and talks by officials. Importance of quality was stressed by explaining that the company was competing with another well-known manufacturer in both quality and unit cost. The use and importance of the casting in the end product was emphasized. Gradually, the sense of pride in individual work, of belonging to a team to beat a competitor and of really having an important job began to develop among the molders. Turnover decreased, production increased.

Greener Grass—During high-employment periods, some employees leave because the "grass looks greener" at another company. If the situation is true, then management has a job of catching up with its area industry. If not—and this is generally the case—then management has a gap to fill in its communications program (see STEEL, Jan. 18, p. 48). Let your employees know their wages compare with those of area industries. Point out company policies which make it advantageous for employees to work for you.

High on the list of major factors affecting labor turnover is supervision. In General Motors Corp.'s "My Job Contest" in 1947, nearly 48 per cent of the employees listed supervisors as important to liking their jobs, more than any other item. By comparison, 41.2 per cent listed associates and 40.9 per cent listed wages.

Supervision Emphasis—In a foreman and supervisor, technical ability and job know-how are important; but many firms place personality and leadership characteristics as the No. 1 qualification. Proper emphasis in handling employees in your foreman training program will pay dividends in worker morale, production—and turnover.

Small companies, too, have turnover problems. But R. B. Watson, Chandler Products Corp., Cleveland, says the small plant has a decided advantage over the large plant. "More personal relationship between management and employees is the key," he points out.

Hiring Factor — Chandler had only one employee with three or more years of service leave in 1953—and he was a 64-year-old man who had transportation difficulties. "We have the usual benefits, and our rates are average for the area," Mr. Watson relates. "But our big asset is that the executives know the employees by their first names. Hiring, too, is in our favor because most applicants are friends or family members of our employees. They know our company policies before they apply; we can check on them very easily through our close employee relationships."

A practice becoming increasingly popular with the larger companies is the exit interview which often provides reasons why employees leave which are not always apparent. A printed form which an employee who quits must fill out, the exit interview asks questions like these: Have you liked your job? Could it have been made safer? Were your supervisor and associates friendly and helpful? Were you satisfied with your take-home pay? And the $24 de-steamer, Why did you decide to leave X-company?—please comment in full.

Signals To Watch—Every company has a "grapevine." Intelligent management makes use of it. One way is to use it as a sounding board for warning signals of discontent which may be developing. Plant atmosphere, too, often provides warnings. Good spirits are usually vocal spirits; a man troubled or discontent is prone to keep to himself until it explodes inside him. A third signal is individual or department production rates. A man generally develops a rhythmic style in his work with a long-run tendency to improve. Discontent with his job and other problems are generally reflected in erratic production rates. By spotting these warning signals early and taking corrective action quickly, management can lessen the chances of turnover.

Tightening of the economy in 1954 will certainly be an important factor in lowering turnover; the rate this year will probably be similar to that of 1949 (see accompanying table), especially in the all-important "quits" column.

Desirable Rates—Most personnel men are quick to point this out: A certain amount of labor turnover is inevitable and desirable. The "desirable rate" varies — Burroughs Corp., Detroit, has a rate of 1.5 workers leaving per 100 employees per month; a large Midwest auto parts supplier has a rate of 1.8. The national average now is about 4.3.

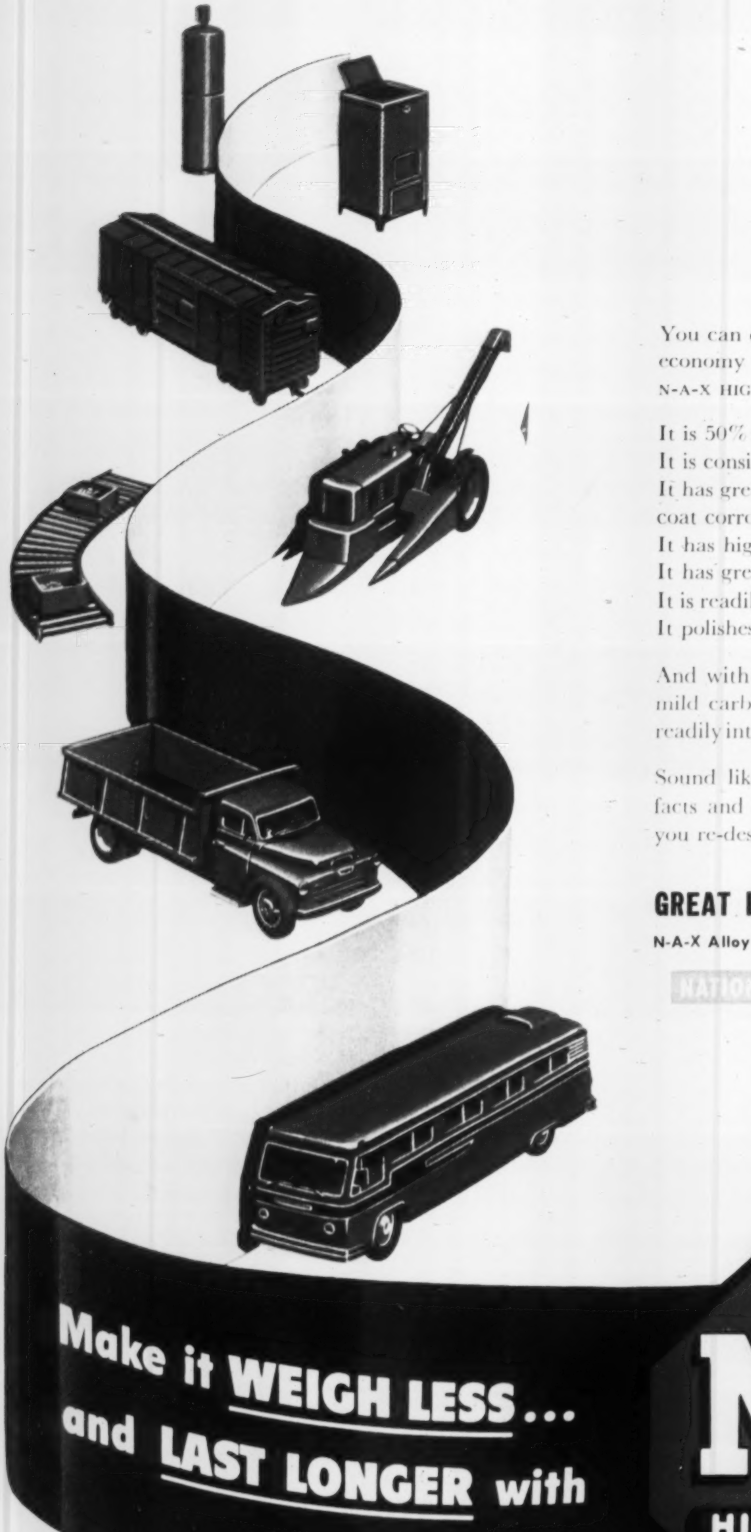
Wholesome labor turnover permits you to improve your organization, it often provides a chain-type reaction in making promotions possible, and, finally, a certain amount of turnover is proof that our free enterprise system is still functioning.

LABOR TURNOVER
1954 May Parallel 1949

(separations per 100 employees per month)

1949	Quits	Misc.*	Total
Jan.	1.7	2.9	4.6
Feb.	1.4	2.7	4.1
Mar.	1.6	3.2	4.8
Apr.	1.7	3.1	4.8
May	1.6	3.6	5.2
June	1.5	2.8	4.3
July	1.4	2.4	3.8
Aug.	1.8	3.2	4.0
Sept.	2.1	2.1	4.2
Oct.	1.5	2.6	4.1
Nov.	1.2	2.8	4.0
Dec.	.9	2.3	3.2
	Monthly Averages		
1949	1.5	2.8	4.3
1952	2.3	1.7	4.0
1953	2.3	2.0	4.3

* Primarily layoffs.
Source: Bureau of Labor Statistics.



You can design light weight, longer life, and economy into your products by including N-A-X HIGH-TENSILE in your plans.

It is 50% stronger than mild steel.
It is considerably more resistant to corrosion.
It has greater paint adhesion with less undercoat corrosion.
It has high fatigue life with great toughness.
It has greater resistance to abrasion or wear.
It is readily and easily welded by any process.
It polishes to a high lustre at minimum cost.

And with all these physical advantages over mild carbon steel—it can be cold formed as readily into the most difficult shaped stamping.

Sound like something for you? Ask for full facts and think of N-A-X HIGH-TENSILE when you re-design.

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION

N·A·X

HIGH-TENSILE STEEL

By FLOYD G. LAWRENCE *Detroit Editor*

Style, Power, Comfort Accented In the 1954 Truck Model Derby

TRYING TO talk about new trucks while the new cars are being introduced is like trying to read during a burlesque show.

But as the automakers were taking off the wraps, the somewhat less shapely truckmakers were kicking high in the chorus line. One truckmaker who resorted to painting a white pickup model with red polka-dots to attract a little attention was amazed to find the chicken-pox paint job was catching and would have had plenty of orders had the cost not proved prohibitive on a production basis.

New Look in Trucks—In a sense that polka-dot paint job is symbolic of trucks in general for 1954. Though buying a truck is still in the equipment sphere, style, horsepower and comfort are creep-in much as in passenger cars. The traditionally hard bitten trucker is finding everything but lace curtains at the windows to keep him happy. A few typical examples: Ride control seats (Chevrolet), driverized cabs (Ford), standard, deluxe and custom cabs (Dodge) and two-tone interior styling (GMC).

Options and accessories, too, are highly reminiscent of passenger car jargon. Power steering, automatic transmission, tinted glass, power brakes and of course radio and heater are accessories moving swiftly up the line from the light models, where many were introduced, toward the heavies. Truck owners are finding that equipment which makes the job of driving a truck physically easier increases productivity on the road just as it does in the shop.

Horsepower is increasing as well, and 23 new models were introduced to meet more trucking applications better. Covering all of the improvements is a prohibitive job spacewise, unlike passenger cars. Ford, for example, lists 220 truck models compared with about 14 passenger models. And that doesn't include the hundreds of options. So here are only some of the highlights of makes recently introduced.

1954 TRUCK HIGHLIGHTS

- **Improved driver comfort**
- **Better visibility**
- **Eye-catching styling**
- **Shortened cabs**
- **Plushier interiors**
- **Higher pay load**
- **Increased horsepower**
- **More power devices**
- **Redesigned drive trains**
- **More automatic transmissions**
- **More special equipment**

Chevrolet — Chevrolet, largest truck builder, concentrated on significant improvements in engines, chassis and body rather than introducing any completely new models. Included are three new engines, horsepowerwise. The Thriftmaster and Loadmaster provide 112 hp through 7.5 to 1 compression ratio with full pressure lubrication, lightweight aluminum pistons, insert-type connecting rod bearings, more rigid crankshaft and connecting rods and strengthened valve mechanism. Exhaust valve rotators, XCR valves and chrome top piston rings are now standard on the Loadmaster and the new Jobmaster. This engine is for heavy duty jobs producing 135 hp with 7.1 to 1 compression ratio. It features a displacement of 261 cu in. accomplished through siamesing the cylinders in an entirely new engine casting.

Automatic transmissions are optional through the one-ton (10,000 pounds GVW) model range, heavier axle shafts in two-ton models, bigger clutches on light and heavy-duty models and more rigid frames on all models. Body height of pickup, platform and stake models has been lowered through modified body mountings. The automatic transmission, incidentally, is Hydra-Matic except on the sedan delivery model on which Powerglide is available.

Dodge—Dodge announces nine new models for 1954. Features are new V-8 engines, power steering, more compact tractors which permit larger payloads, a new improved steering linkeage, wider front treads which help increase maneuverability, new frames, increased driver comfort and visibility, lower loading height, better road stability, and completely new styling. Seven engines offered range from 100 to 172 hp, GVW ranges from 4250 to 40,000 pounds and gross combination weights range up to 60,000 pounds.

Shortened tractors of 102 inches in conventional models and only 82 inches in cab-over-engine jobs permit use of longer trailers while staying within the legal 45-foot over-all length necessary to operate in all 48 states. The new frames curve in at the front wheels, creating a recess for the steering gear and increasing the clearence between front wheels and frame. Other improvements include one-piece curved windshield, more shoulder room, new instrument dials, improved cab sealing and lower and wider running boards.

Ford—Four new short-stroke OHV V-8 engines, an improved six and the first tandem-axle unit offered by the firm highlight Ford trucks for 1954. Five truck lines ranging from 4,000 to 40,000 GVW are offered with Master-guide pow-

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

er steering now available on the big jobs and Fordomatic on all light-duty models. New to the line are the series T-700 and T-800 tandem axle trucks with gross combination weights up to 60,000 pounds. Also added are two new cab-forward series, the C-700 and C-900 big jobs.

Horsepower ranges from 115 hp in the Cost Clipper Six to 170 hp in the Cargo King OHV-V8. Power braking is optional on some models, standard equipment on series 600 models and up. The big jobs have the Ford de-popper valve which uses engine vacuum to stop downhill backfiring at its source.

GMC—The new silent power exhaust system, three new models, addition of Hydra-Matic to medium-duty models and one piece windshield are among highlights of the GMC line for 1954. Safety power steering is available on all medium and heavy-duty GMC's this year, and a complete new cab-over-engine line which complies with length limitations are also featured.

With exterior styling changes a new deluxe package is also offered this year. It includes an all-chrome front end, right hand sun visor, driver's arm rest, deluxe two-tone upholstery, hood ornament, two-tone exterior paint and chrome hub caps. A number of other individual model improvements further keynote the GMC pitch for 1954.

Other truckmakers are not normally considered to offer annual models with the exception of Studebaker which has yet to be heard from. With style, horsepower, comfort, maneuverability, handling and lower chassis taking over, it almost wouldn't be surprising to see Studebaker come out with a full line of wire-wheeled sports trucks.

Packard Shifts to Utica

In the largest move in the company's 55-year history, completely automatic machine tools to manufacture engines, automatic transmissions and axles will be installed in a 1-million-square-foot, single-story plant at Utica, Mich. Part of a manufacturing modernization program, the installation will be completed in time for production of 1955 models.

The facilities program is under the direction of Ray P. Powers, vice president of manufacturing, who joined Packard six months ago after completing comparable facilities for Lincoln-Mercury Division of Ford Motor Co.

Auto, Truck Output

U. S. and Canada

	1954	1953
January	594,679	612,815
February		623,793
March		752,474
April		782,453
May		685,390
June		713,206
July		757,595
August		641,152
September		605,228
October		651,153
November		457,852
December		528,681
Total		7,829,461

Week Ended	1954	1953
Jan. 9	152,418	139,620
Jan. 16	149,841	148,049
Jan. 23	146,741	149,550
Jan. 30	143,654	150,289
Feb. 6	138,378	146,809
Feb. 13	137,000*	147,103

Source: Ward's Automotive Reports.
*Estimated by STEEL.

In addition to the million square feet to be used for automotive production at Utica, the company also will continue in an adjacent plant area jet engine operations and testing.

Spending GM's $1 Billion

Here is the complete run-down on where General Motors will spend its $1 billion for expansion:

Chevrolet — Over 5 million square feet of new plants and additions will be built to hike capacity 22 per cent. Included are a new engineering center, an engine plant, a frame and stamping plant, a spring and bumper plant, expanded forging operations at the Chevrolet-Muncie plant and a new forging plant at Tonawanda, N. Y., a 360,000-square-foot addition to the Tonawanda motor plant and a completely new foundry and forge plant also at Tonawanda.

Pontiac—More than 1.3 million square feet will be added, including a car finish building, a sheet metal and stamping plant, additions to the foundry, a new service parts machine building and a second automatic bumper plating line.

Oldsmobile—Balancing manufacturing operations keynote Oldsmobile's parcel of the GM expansion. New bumper-plating facilities, new equipment in the engine, pressed metal and axle plants and additional die making equipment, large forging presses, induction heating furnaces, draw furnaces and heat treating furnaces are being added to the forge plant.

Buick—More machines to boost Dynaflow production 500 units daily, six new foundry cupolas and a new cupola building are among Buick's balancing moves. A 20,000-square-foot addition will be made to the forge shop and the axle plant is being expanded.

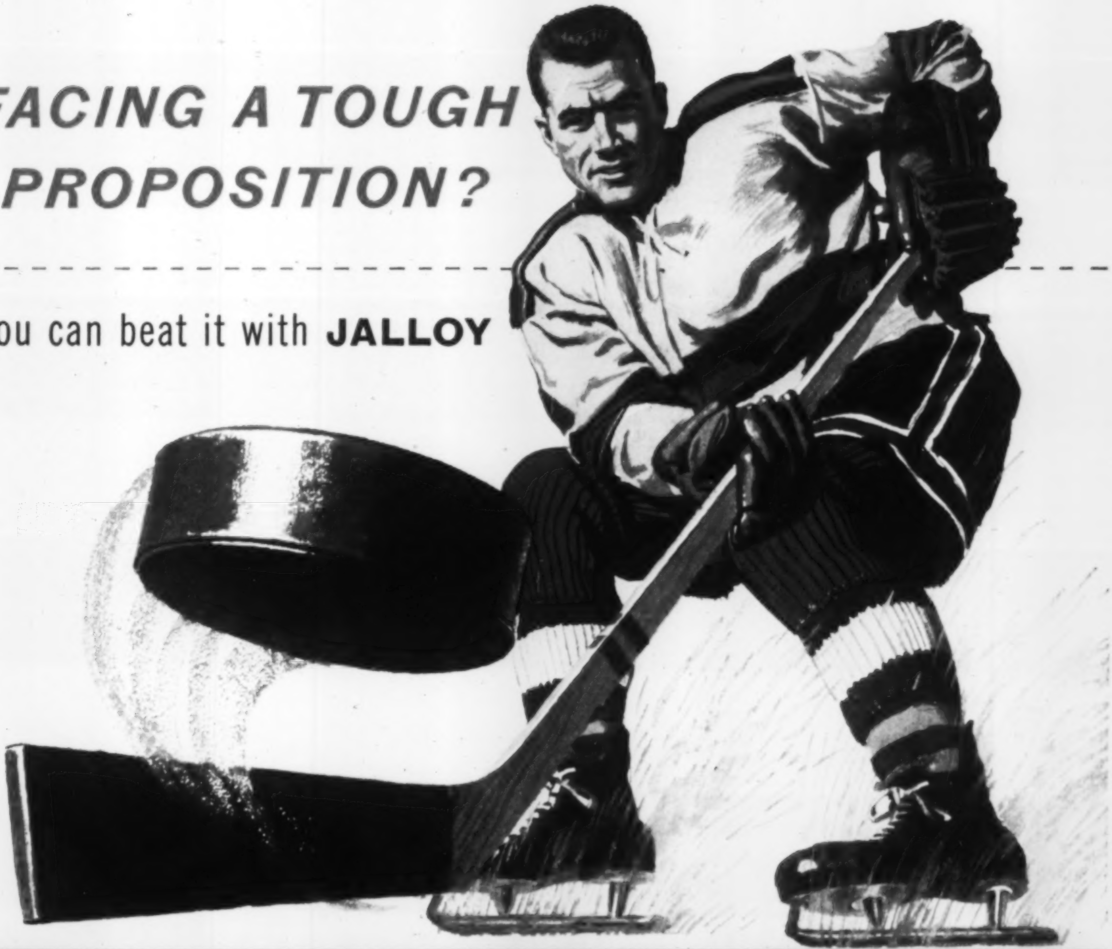
Cadillac—An expansion to increase production capacity during normal working hours by 40 per cent is announced by this division. Added to the Clark avenue plant will be 600,000 square feet of manufacturing space while a Riopelle avenue plant and a Wesson avenue plant will accommodate parts and service facilities and defense activities, respectively. Included in the Clark avenue plant is a new three-story plating building with 150,000 square feet of floor space, an addition to the final assembly building, a new machining area in the motor plant and three additional floors of sheet metal space.

GMC—New machine tools, equipment and over-all plant improvement and expansion will do the job for truck and coach. Additions to existing buildings and facilities have already been started, with one adding 33,000 square feet of floor space to truck assembly and paint operations.

Fisher Body — Over 1 million square feet will be added to body facilities, largely proportional to output in the coachmaking divisions. Included are plants in Kansas City, Mo.; Janesville, Wis.; Cleveland and Hamilton, O.; Grand Rapids, Pontiac and Flint, Mich.; and Pittsburgh, Pa.

FACING A TOUGH PROPOSITION?

you can beat it with **JALLOY**



J&L JALLOY HEAT-TREATED PLATE BEATS WEAR DUE TO ABRASION

Jalloy lowers maintenance costs on coal conveyors

Jalloy provides longer wear with less repair in truck bodies

Jalloy Plates outlast other steels by margins of 4 to 1

Jalloy Aprons in Tyrock screens last 3 times as long as other steels

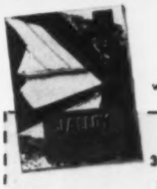
J&L Jalloy Heat-Treated Plate is the general purpose steel that is heat treated to provide longer wear on applications where impact and abrasive conditions are severe.

In comparison with other abrasion-resistant steels as well as mild steels, it gives optimum results when heat treated to a Brinell hardness of 340 and up. Jalloy permits savings in steel costs, maintenance, and repair. Furthermore, it is easily welded.

Jalloy is available in three grades to meet various service requirements.

J&L STEEL

Jones & Laughlin
STEEL CORPORATION — *Pittsburgh*



Complete data concerning CHEMICAL COMPOSITION . . . HEAT TREATMENT . . . WELDABILITY . . . PHYSICAL PROPERTIES . . . will be mailed to you promptly. Write today.

Jones & Laughlin Steel Corporation
3 Gateway Center, Dept. 404, Pittsburgh 30, Pa.

☐ Please mail complete data concerning Jalloy.
☐ Please have your representative call.

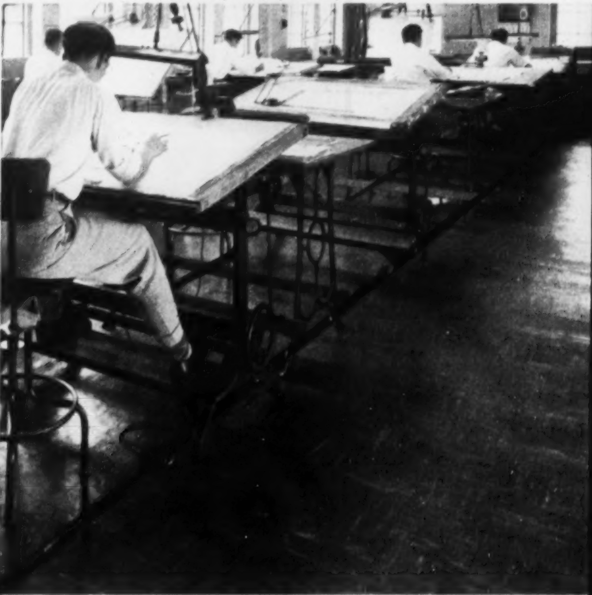
Name________________ Title________
Company________________________
Address________________________

Steel That Keeps Electricity in Line

Sharon representative works with customer to make sure steel exactly fits job requirements.

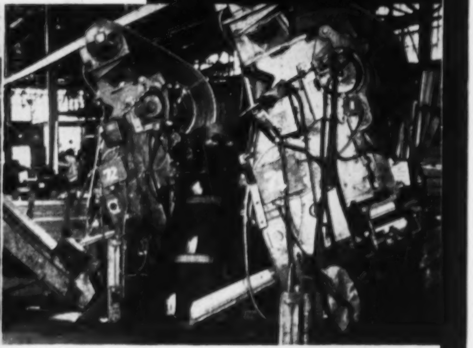
Large coil strip Galvanite* permits greater production.

Leading Conduit Maker Extends Product Life by Specifying Rust-Free Galvanite*



Above floor raceways of Galvanite* require no paint, wear well and repel rust and corrosion.

Galvanite* forms as easily as mild steel. Does not flake or peel.



The zinc coat stays put . . . no excessive die coating.

Conduit and raceways used for carrying electric and telephone lines through buildings must be of a material that will last the life of the structure itself.

Frequently these conduits become an integral part of the building, installed in such a manner that replacement would be a costly matter. That's why many manufacturers of these products use Sharon Galvanite*. This special process zinc-coated steel fights rust and corrosion naturally — doesn't require a protective coating. And it forms, and otherwise fabricates, with the ease of plain mild steel.

One of the nation's largest conduit manufacturers specifies Galvanite* wherever this rust-fighting quality is required and has found it to be ideal, too, for above floor raceways (see picture) that are necessitated where frequent alteration of working space is required.

If you are making a product that requires steel that must repel rust and corrosion why not try Sharon Galvanite* — a truly fine zinc-coated steel.

*Trade name copyrighted by the Sharon Steel Corporation

Galvanite
430

Type 430 Stainless and Galvanite* Coated booklets are available from any Sharon office.

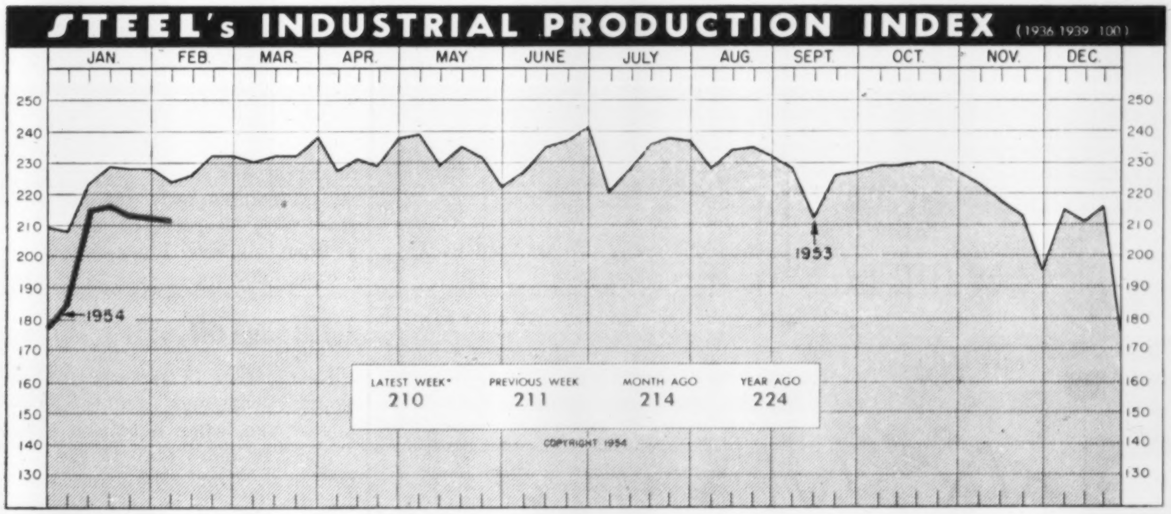
SHARONSTEEL

SHARON STEEL CORPORATION
Sharon, Pennsylvania

DISTRICT SALES OFFICES

Chicago	Cincinnati
Cleveland	Dayton
Detroit	Indianapolis
Milwaukee	New York
Philadelphia	Rochester
Los Angeles	San Francisco
Seattle	
Montreal, Que.	Toronto, Ont.

*Wherever Rust is a Problem-Specify Galvanite**



*Week ended Feb. 6

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%

Inflation: Part and Parcel of Our Economy?

CARROLL SHANKS, president, Prudential Insurance Co., put his finger on a most important economic fact of life when he concluded that a politically dominated economy such as ours will have flexible, easy money, rather than flexible, sound money. It is a policy that will "make it difficult to be sanguine as to the possibility of controlling inflation in our future."

In support of this belief, Mr. Shanks pointed out that we have developed techniques "which should be sufficiently effective on downswings to avoid serious recessions. But on the upswings, when we face the problem of avoiding inflation, the remedies developed have broken down . . . due to the continued pressure for a one-way easy money policy."

Lenders Urged To Cut Rates . . .

Latest cut in the rediscount rate of several Federal Reserve Banks from 2 per cent to 1.75 per cent comes at a time when business loans have dropped substantially. This action, to encourage business borrowing, will put additional pressure on the prime rate of commercial banks, the rate charged the biggest borrowers with the best credit ratings. Already interest rates have been trimmed on bankers' acceptances and short-term commercial paper.

Expand Production First . . .

Proposed tax changes also will aid business directly. Both William McChesney Martin, chairman of the board, Federal Reserve System, and George M. Humphrey, secretary of the treasury, believe tax reduction should be aimed primarily at expanding production rather than consumption. Their belief would rest on the theory that such activity would involve not only the most additional money but would benefit the consumer with a lower-priced item. It is also in the interest of national preparedness.

Income Slide Slowed . . .

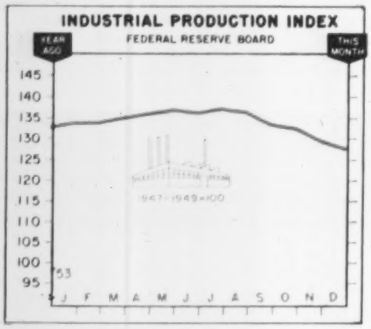
Meanwhile, present economic downtrend should be looked at through various facets. Americans earned personal income at an annual seasonally adjusted rate of $284.7 billion in December, the Office of Business Economics says. Though personal income declined for the second consecutive month, the slide between November and December was less than that from October to November. The December rate was also $200 million above the rate for the full year.

Real Income Higher . . .

After allowance for changes in personal taxes, consumer prices and population, real disposable income per capita rose about 3 per cent in 1953, compared with a climb of less than 1 per cent in the preceding year.

Manufacturing Decline Slight . . .

At the manufacturing level in December the number of unfilled orders continued to decline even as sales on a seasonally adjusted basis slipped to $24.1 billion. Manufacturers' inventories actually rose to $46.9 billion by year-end, but when they are related to the time of year, stocks failed to show the customary increase. While new orders of $21.3 billion during December were about $3 billion below the comparable

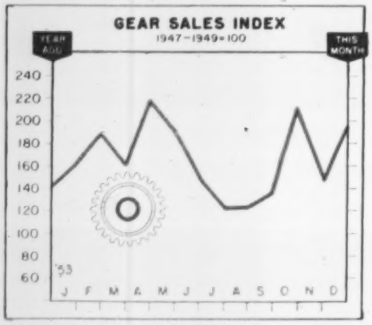


Industrial Production Index

1947-1949=100

	Total Production 1953	Total Production 1952	Primary Metals 1953	Primary Metals 1952	Metal Fabricating 1953	Metal Fabricating 1952
Jan.	134	121	135	125	168	137
Feb.	134	121	137	125	168	138
Mar.	135	121	136	125	168	139
Apr.	136	120	136	116	169	139
May	137	119	139	116	169	142
June	136	118	137	63	168	143
July	137	115	136	56	171	134
Aug.	136	123	137	126	171	142
Sept.	133	129	130	132	166	154
Oct.	132	130	128	134	165	159
Nov.	129	133	122	136	159	164
Dec.	127	133	114	135	157	166
Avg.	134	124	132	116	167	146

Federal Reserve Board.

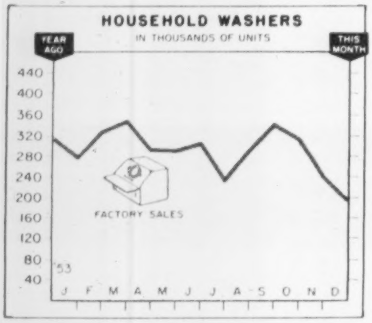


Gear Sales Index

(1947-1949=100)

	1953	1952	1951
Jan.	161.4	670.6*	764.6*
Feb.	188.1	539.5*	809.1*
Mar.	158.9	517.1*	830.7*
Apr.	217.1	478.7*	742.5*
May	189.8	425.9*	661.7*
June	146.5	452.3*	800.9*
July	120.7	145.3	589.1*
Aug.	121.6	132.3	561.2*
Sept.	135.6	143.4	630.0*
Oct.	211.1	160.8	703.4*
Nov.	144.9	150.9	530.0*
Dec.	194.0	140.9	716.5*

*(1935-1939=100)

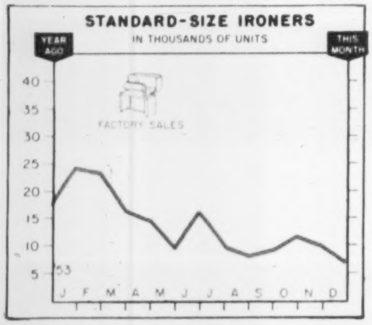


Household Washers

Sales Billed—Units

	1953	1952	1951
Jan.	277,309	213,998	321,092
Feb.	326,604	255,864	341,328
Mar.	345,989	248,431	368,455
Apr.	288,474	217,211	292,193
May	286,515	213,668	253,942
June	304,086	274,457	253,119
July	228,268	207,593	139,799
Aug.	291,260	254,537	239,081
Sept.	340,532	283,732	313,756
Oct.	310,867	327,814	297,210
Nov.	238,153	293,079	262,484
Dec.	191,570	310,661	218,664
Totals	......	3,101,045	3,301,123

American Home Laundry Mfrs. Assn.



Standard-Size Ironers

Factory Sales—Units

	1953	1952	1951
Jan.	24,395	15,636	24,600
Feb.	22,586	17,630	32,400
Mar.	16,066	13,913	34,700
Apr.	14,080	8,938	23,700
May	9,323	12,652	24,200
June	12,529	17,654	24,500
July	9,626	15,025	11,100
Aug.	8,067	16,477	17,200
Sept.	9,113	22,492	18,300
Oct.	11,666	25,204	29,800
Nov.	10,105	19,724	20,500
Dec.	6,908	16,798	16,900
Total	.....	202,143	277,700

American Home Laundry Mfrs. Assn.

Charts Copyright 1954 STEEL.

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Dec. 28
Durable Goods	Dec. 14
Employ., Metalwk.	Jan. 25
Employ., Steel	Feb. 1
Fab. Struc. Steel	Dec. 21
Foundry Equip.	Jan. 25
Freight Cars	Jan. 25
Furnaces, Indus.	Jan. 8
Gray Iron Castings	Jan. 18
Machine Tools	Jan. 8
Malleable Castings	Jan. 18
Prices, Consumer	Dec. 7
Prices, Wholesale	Feb. 1
Pumps	Nov. 16
Radio, TV	Jan. 25
Ranges, Elec.	Jan. 8
Ranges, Gas	Jan. 11
Refrigerators	Jan. 8
Steel Castings	Jan. 18
Steel Forgings	Feb. 1
Steel Shipments	Jan. 11
Vacuum Cleaners	Jan. 11
Wages, Metalwk.	Feb. 1
Water Heaters	Jan. 11

month in 1952, these billings were $300 million above November.

Goods Move at Wholesale! . . .

In the wholesale field, December saw sales jump 12 per cent over the previous month to a level 1 per cent above the corresponding month a year earlier. Significantly, inventories were reduced substantially, 10 per cent, from November to a level 1 per cent under a year ago.

Retail Sales Off . . .

Retail trade in January appears to have continued slightly above a year ago, when it totaled about 6 per cent more than in the year earlier. Over the succeeding months that gain has been reduced, and now it may be only about 1 per cent above a year ago. Looking at department stores alone, sales in the four weeks ended Jan. 30 were 1 per cent below the comparable period last year.

Extent of Retail Slide . . .

Biggest retail question today is: If sales of hard goods slide will purchases of soft goods take up the difference? Dr. Charles F. Roos, president, Econometric Institute Inc., feels soft goods purchases will increase with spending for clothing and allied lines above 1953 in every quarter this year and buying of food higher during the first half and unchanged in the second half. Increased spending for nondurables will have to make up a durable goods decline during the year of 4 per cent, according to Dr. Roos.

Business Rise Ahead? . . .

Increase in railroad freight carloadings during the latest week and the high level of orders obtained during January for civilian commercial trailers by the Fruehauf Trailer Co. may indicate a business pickup. In the week ended Jan. 30, carloadings totaled 628,190 cars, 1.8 per cent more than in the previous week, according to the Association of American Railroads. The increase was made up largely of gains in load-

BAROMETERS OF BUSINESS

	LATEST PERIOD	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	74.0	73.0	97.5
Electric Power Distributed (million kwhr)	8,674	8,855	8,129
Bitum. Coal Output (daily av.—1000 tons)	1,398	1,363	1,489
Petroleum Production (daily av.—1000 bbls)	6,300[1]	6,259	6,522
Construction Volume (ENR—millions)	$194.3	$171.1	$599.9
Automobile, Truck Output (Ward's—units)	138,378	143,654	146,809
TRADE			
Freight Car Loadings (unit—1000 cars)	630[1]	628	691
Business Failures (Dun & Bradstreet, no.)	238	233	159
Currency in Circulation (millions)[3]	$29,930	$29,900	$29,657
Dept. Store Sales (changes from year ago)[3]	−1%	0%	+4%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$20,383	$18,511	$18,064
Federal Gross Debt (billions)	$274.8	$274.9	$267.4
Bond Volume, NYSE (millions)	$20.9	$20.2	$17.8
Stocks Sales, NYSE (thousands of shares)	8,936	9,685	8,893
Loans and Investments (billions)[4]	$80.1	$79.8	$77.3
U. S. Gov't Obligations Held (billions)[4]	$33.3	$33.0	$31.7
PRICES			
STEEL's Finished Steel Price Index[5]	189.74	189.74	181.31
STEEL's Nonferrous Metal Price Index[6]	203.3	203.3	210.7
All Commodities[7]	110.6	110.9	109.6
Commodities Other Than Farm & Foods[7]	114.5	114.5	113.1

---

*Dates on request. [1] Preliminary. [2] Weekly capacities, net tons: 1954, 2,384,549; 1953, 2,254,459. [3] Federal Reserve Board. [4] Member banks, Federal Reserve System. [5] 1935-1939=100. [6] 1936-1939=100. [7] Bureau of Labor Statistics Index, 1947-1949=100.

ings of miscellaneous freight and merchandise of less than carload. Roy Fruehauf says that the January order increase in truck-trailers was due to striving of truckers and industry for increased efficiency in operations.

Price Cracks Appear . . .

Important developments affecting prices have also occurred recently. By cutting prices from $20 to $210 on its Rambler and Statesman cars, Nash-Kelvinator Corp. became the first automaker to revise downward its original 1954 model prices. U. S. Steel Corp. took what will probably become an industry-wide step when it substantially reduced its price extras on some quality grades of cold-rolled sheet steel.

Unemployment Picture . . .

Number of unemployed rose by about 500,000 between December and January to total 2,360,000, the Department of Commerce reports. The change was less than the drop in employment since many housewives and others holding temporary Christmas jobs withdrew from the labor market. Increase in unemployment, although substantial, was only slightly greater than the post-Christmas rise in most other years since World War II.

Men, Not Statistics! . . .

Of unemployment, William McChesney Martin says, "This is the vital statistic we must watch vigilantly . . . I do not subscribe to the harsh notion that some unemployment—how much is rarely stated—is a good thing. The man who wants to work and earn a livelihood cannot be expected to be tolerant about any statistical figure of unemployment if it includes him."

The Cleveland Trend . . .

It is to be hoped that the declining trend of unemployment compensation claims in Cleveland will catch on nationally. New claims in that city have dropped off each week for the last three weeks even though continued claims have tended to rise slowly for the last two weeks.

Production Steps Down . . .

The slackened pace of business is reflected by STEEL's index of industrial production. In the week ended Feb. 6 it was at 210 per cent of the 1936-1939 average.

"I Say Sheet Coil"
THIS IS COLD ROLLED
SHEET COIL
Produced by High Speed Rolling on Continuous Wide Multiple Stand Mills and Slit to Width
NOT TO BE CONFUSED WITH PREMIUM QUALITY COLD ROLLED STRIP
THIS IS
CMP
THINSTEEL
TRADE MARK
COLD ROLLED STRIP STEEL
A Quality Product Precision Cold Rolled on Special Reversing Mills with Special Ground Rolls for Fine Surface Finish and Close Accuracy
NOT TO BE CONFUSED WITH COMMERCIAL QUALITY SHEET COIL
"I Say Thinsteel"

Which kind of Cold Rolled Strip Steel is best for You ?

CONSIDER SHEET COIL

—if variations in physical characteristics are permissible.
—if fairly heavy oversize gauge variations are not objectionable.
—if the fabricating operations are not too complicated and do not require intricate expensive dies.
—if a fine surface finish is not essential.
—if a good base for paint or enamel is desired.
—if you do not object to some "square footage" loss due to oversize variation.
—then Sheet Coil will probably be the most economical material for the job.

CONSIDER THINSTEEL

—if you must have a high degree of uniformity of chemistry and physical properties—and precision gauge tolerances.
—if you wish to keep die wear low, no oversize gauge variations.
—if you require a fine finish or a better base for plating.
—if you want maximum yield for "most finished parts per ton."
—if you want selected tempers for maximum strength and lightest weight.
—then you'll find Thinsteel the most economical material by far.

No Argument Here....
Kenilworth Stocks Both

You can always count on Kenilworth helping you get the right steel for your requirements. Order Sheet Coil or Thinsteel and notice that each coil carries an identifying tag as pictured above. Call on Kenilworth, too, for your needs in Stainless Sheets or flat rolled Spring Steels (Annealed or hardened and tempered).

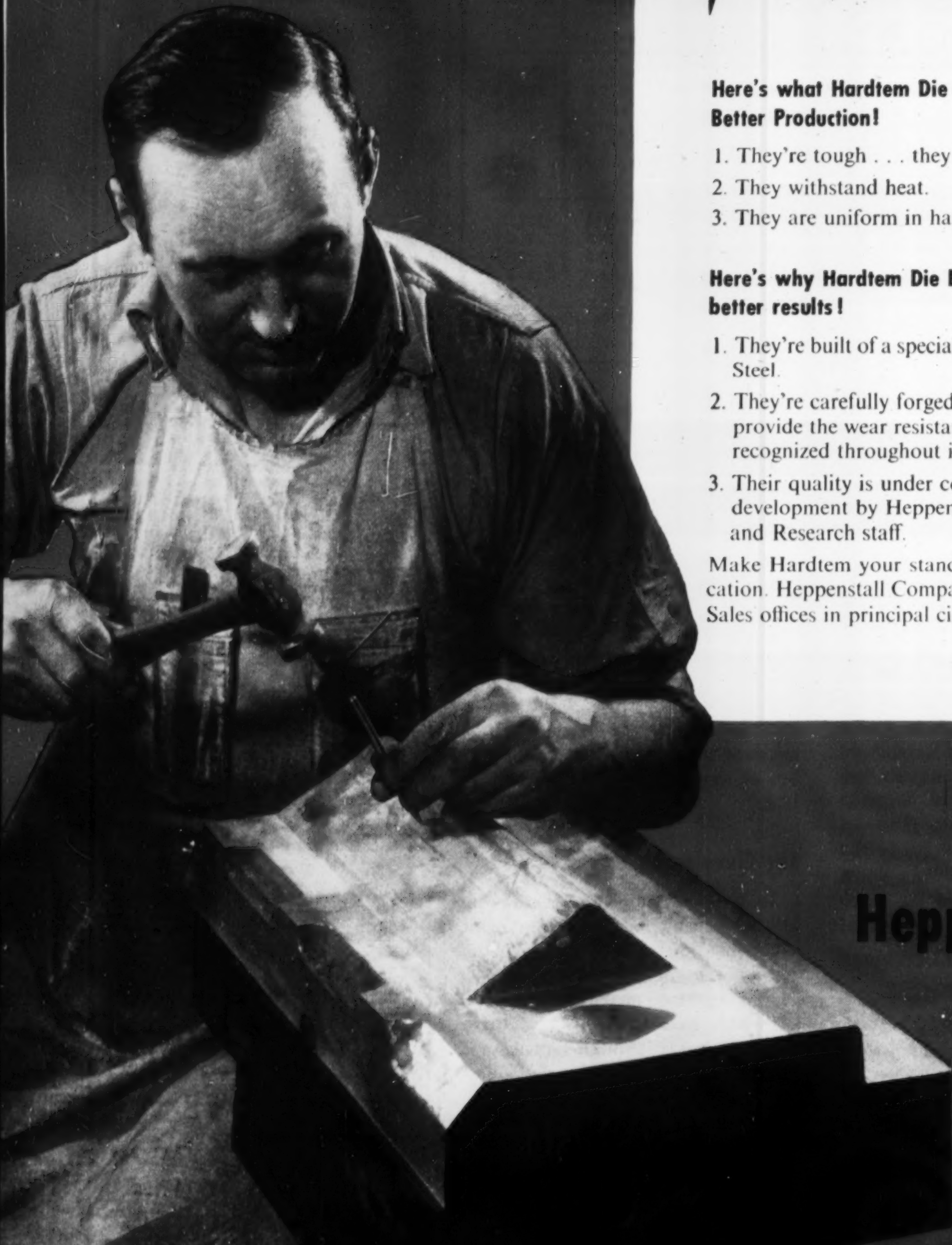
THE Kenilworth Steel co.
750 BOULEVARD,
KENILWORTH, NEW JERSEY

SPECIALISTS IN FLAT ROLLED METAL PRODUCTS

Telephones: N. Y. COrtlandt 7-2427
N. J. UNionville 2-6900
Teletype: Roselle, N. J., 387

Built For Better Production

Hardtem Die Blocks



Here's what Hardtem Die Blocks mean to Better Production!

1. They're tough . . . they resist impact stress.
2. They withstand heat.
3. They are uniform in hardness.

Here's why Hardtem Die Blocks assure better results!

1. They're built of a special patented Heppenstall Steel.
2. They're carefully forged and heat treated to provide the wear resistance for which they are recognized throughout industry.
3. Their quality is under constant study and development by Heppenstall's Engineering and Research staff.

Make Hardtem your standard die block specification. Heppenstall Company, Pittsburgh 1, Pa. Sales offices in principal cities.

Heppenstall

. . . the
most
dependable
name
in
die
blocks

CHARLES C. SMITH
. . . joins Roll Forming Corp.

WILLIAM R. PLUMMER
. . . gen. sales mgr. at Garland Mfg.

GEORGE D. NEWMAN JR.
. . . gen. sales mgr., Hitemp Wires

Charles C. Smith, formerly superintendent of manufacturing for General Electric Co. in Louisville, joined **Roll Forming Corp.,** Shelbyville, Ky. He supervises and co-ordinates production, purchasing and engineering of roll formed shapes for aircraft, ordnance and building materials.

Martin J. Hartigan was appointed manager of supply purchases of **Joseph T. Ryerson & Son Inc.,** Chicago. He formerly was manager, mill and factory sales department, functions of which are now taken over by other divisions of the company.

Arthur J. Burke assumes full duties of chief engineer at **Richardson Scale Co.,** Clifton, N. J. He succeeds **John P. Clifford,** vice president who recently retired. For the last two years Mr. Burke has been acting chief engineer.

U. S. Steel Corp.'s **Columbia-Geneva Steel Division,** San Francisco, appointed **Robert C. Talbott** manager of raw materials development and **H. M. Gage** as assistant to the director of purchases.

Franklin H. Bivins was named general manager of the newly created **Vitro Rare Metals Co.,** Canonsburg, Pa., a division of Vitro Corp. of America. Mr. Bivins was formerly assistant vice president of Bristol-Meyers Co.

William R. Plummer was made general sales manager, **Garland Mfg. Co.,** Detroit. He was formerly sales manager, Progressive Welder Sales Co.

Jack C. Malugen succeeds **Michael J. Kearins** as president of **J. H. Williams & Co.,** Buffalo. Mr. Kearins was made chairman of the board to succeed the late **A. D. Armitage.**

Quaker Rubber Corp., Philadelphia, division of H. K. Porter Co. Inc., appointed **W. H. Van Buren** assistant general sales manager, eastern division branches.

Hendey Machine Co. Inc., Torrington, Conn., announces resignation of **Helge G. Hoglund** as vice president in charge of sales and retirement of **Frank J. McCarty** as general sales manager. **Charles A. Torson** was promoted to general sales manager in charge of all sales activity.

Frank W. Glaser was elected vice president, **American Electro Metal Corp.,** Yonkers, N. Y.

Edmund J. Gosky was appointed manager of production engineering for Adel Division, **General Metals Corp.,** Burbank, Calif.

Florence Stove Co., Gardner, Mass., appointed **Victor K. Genger** of Chicago as management engineer.

Hitemp Wires Inc., Mineola, L. I., appointed **George D. Newman Jr.** general sales manager. He was formerly associated with Minnesota Mining & Mfg. Co. for ten years. In his new post he succeeds **Robert Weitzen,** now vice president of advertising and market research.

Robertshaw-Fulton Controls Co. appointed **Thomas H. Jeffers** to assistant general manager of its Anaheim, Calif., division. He also was elected an assistant vice president of the company. Mr. Jeffers was formerly chief engineer at Anaheim.

Erie Sheet Steel Corp., Cleveland, appointed **R. J. King** sales manager of warehouse sales, handling sheets, plates and structurals. He was formerly with Republic Steel Corp. for five years and also served with Builders Structural Steel Co.

Marquardt Aircraft Co., Van Nuys, Calif., elected **Don L. Walter** vice president-operations and **William H. Schwebel** vice president-finance. Mr. Walter formerly was director of engineering and manufacturing.

Edward J. Charlton, manager of development engineering, becomes manager of fabrication at the Lukenweld Division, **Lukens Steel Co.,** Coatesville, Pa., on Feb. 22. **Frank C. Kardevan,** present manager of fabrication at Lukenweld, will join the Lukens field sales organization as a sales engineer to work particularly with Lukenweld products. **William H. Funk** will be acting manager, new products development department.

New vice presidents of **Behr-Manning Corp.**, a Norton Co. subsidiary, Worcester, Mass., are **Leon E. Hoogstoel**, technical director since 1945, and **Edwin C. Evans**, director of manufacturing. **T. A. Cordner** was named controller.

Geo. F. Alger Co., Detroit, appointed **Robert Stouten** sales manager for its western Michigan district, **Burt Koenitzer** as central Michigan sales manager, **A. F. Brandt** eastern Michigan sales manager.

Grinnell Co. Inc., Providence, R. I., appointed **Helmut Thielsch** metallurgical engineer of its industrial piping division. For the last three years he has been with the Welding Research Council of the Engineering Foundation.

M. K. Peck was made an assistant sales manager for **Bullard Co.**, Bridgeport, Conn.

Selected to direct sales activities of the newly created distributor division and the recently organized industrial division at **Weatherhead Co.**, Cleveland, are **Gene P. Robers** and **Lester J. Henderson**, respectively.

E. M. DeWINDT

W. R. EAMES

. . . general managers of Eaton Mfg. divisions

E. M. deWindt was appointed general manager, stamping division, **Eaton Mfg. Co.**, Cleveland. **W. R. Eames** was made general manager of the Detroit pump division. Mr. deWindt succeeds **R. E. Fisher**, recently elected vice president in charge of sales for the corporation. Mr. Eames succeeds **F. H. Mott**, now administrative vice president of plant operations in Michigan.

At **Inland Steel Co.'s** Indiana Harbor, Ind. works, **Fred H. Johnson**, **Leland B. Luellen** and **Dr. Edwin D. Martin** have been freed of operating duties to devote full time to research programs designed to keep Inland abreast of technological progress being made in worldwide steel production. Mr. Johnson, former chief engineer, and Mr. Luellen, former assistant general superintendent, were named assistants to the vice president in charge of steel manufacturing. Dr. Martin, former superintendent-research and development, will now concentrate on a full time program of research and development. **Irwin R. Rosenak** was made chief engineer, and Mr. Luellen's responsibilities are split between the newly appointed assistant general superintendents, **F. G. Jaicks** and **R. S. Gentz**. The former is replaced as superintendent of #3 open-hearth shop by **R. G. Phelps**. **Michael Tenebaum** was made assistant superintendent for quality control for all departments, and **James W. Halley** is now assistant superintendent of research and development.

H. B. Jeffrey, vice president and assistant to the president, **Great Lakes Steel Corp.**, Ecorse, Mich., has resigned. **J. J. Jeffrey**, vice president in charge of personnel and an assistant to the vice president-operations, is on a six-month leave of absence.

Scovill Mfg. Co. elected **Garvin A. Drew** vice president and **George W. Gross** assistant vice president of its A. Schrader's Son Division, Brooklyn, N. Y., and **George W. Young** as assistant vice president of its Oakville Co. Division, Oakville, Conn. **Sherman R. Knapp**,

GENE P. ROBERS

LESTER J. HENDERSON

. . . head new sales divisions at Weatherhead Co.

"There's still one cost I can control... assemblies!"

. . . and so can you with AMERICAN PHILLIPS SCREWS

Yes, cost-control is rough going these days. But this smart operator has found one sound answer. He's cut his assembly costs *almost* 50% with American Phillips Screws . . . which are straight-driving, slip-proof, best insurance you can buy against spoiled material, rejects, delayed deliveries, cussing customers. Are *you* downhearted about cost-control? Find out about the *American Way* of keeping costs down . . . *quality up*. Write:

SINCE 1838

AMERICAN
SCREW
COMPANY

PHILLIPS HEADquarters
WILLIMANTIC, CONNECTICUT

Main Office & Plant
Willimantic, Conn.
Office & Plant, Norristown, Pa.
Office & Warehouse, Chicago, Ill.
Office, Detroit, Michigan

W. E. SPANINGER
. . . promoted by Lee Wilson Eng. Co.

STEWART S. CORT
. . . Bethlehem Pacific v. p.-sales

A. C. LUNDGREN
. . . Thew Shovel vice president

president and director of Connecticut Light & Power Co., was named a director, succeeding the late **Lester J. Ross.**

Lee Wilson Engineering Co. Inc., Cleveland, appointed **W. E. Spaninger** director of purchases and production manager, also in charge of assembly plant operations. **C. C. Blackman** was made assistant chief engineer and **R. R. Hill** superintendent of the service department. **William Watts** left the company to start his own manufacturers' agent business.

Jack H. Cobb joined the Chicago sales office of **Electric Controller & Mfg. Co.,** which also announces opening of a Buffalo-area office at 675 Main St., East Aurora, N. Y., under the direction of **N. Mark Hodapp,** previously located in Syracuse, N. Y.

William Coleman is acting president of **Aero Supply Mfg. Co.,** Corry, Pa. **Sam J. Irvine,** president, is convalescing from illness.

Donald C. Simpson, former vice president and manager of Mengel Co.'s cabinet division, joined **Reynolds Metals Co.'s** general sales office in Louisville as project director, sales development division.

W. Tyrone Gillespie, an attorney in the legal department of **Dow Chemical Co.,** Midland, Mich., will also serve as assistant to the president, the second such post on the president's staff.

Stewart S. Cort, general manager-sales, **Bethlehem Pacific Coast-Steel Corp.,** San Francisco, was promoted to vice president in charge of sales to succeed **Harvey Hewitt,** retired.

Pittsburgh Steel Co. named **Carl M. Foreman Jr.** district sales manager at its newly formed Dayton, O., district and **Howard S. Gier** manager of its Thomas Strip Division sales at Warren, O.

Timken Roller Bearing Co., Canton, O., appointed **Otmar C. Miller** sales engineer for its steel and tube division with headquarters in Chicago.

JOHN D. IVERSEN
. . . elected vice president-operations, Mesta Machine Co., Pittsburgh. Noted in STEEL, Feb. 1, p. 67

A. C. Lundgren was elected a vice president of **Thew Shovel Co.,** Lorain. O. He has been a director of the company and purchasing director since 1946. He retains responsibility for procurement of materials.

Ehrick Wright was made production manager of **Fyr-Larm Co. Inc.,** Summit, N. J.

Officers were named for **Borolite Corp.,** recently formed by Firth Sterling Inc., American Electro Metal Corp. and Carborundum Co. to develop and manufacture various metal borides for high temperature military and civilian applications. It has sales headquarters in Niagara Falls, N. Y. **Gen. Clinton F. Robinson,** Carborundum's president, was named a director and president; **Kenneth D. Mann,** Firth Sterling president, and **Dr. Paul Schwarzkopf,** American Electro Metal president, were elected vice presidents and directors. Secretary is **Edward A. Montgomery** and **Willis T. Windle** is treasurer-controller.

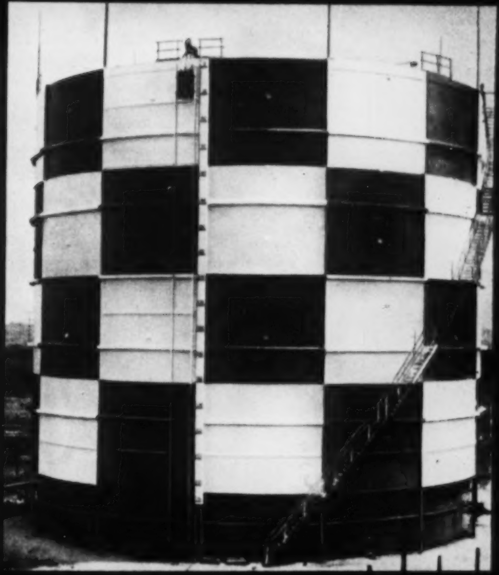
Patrick T. Rauen, secretary, was elected vice president of **United States Spring & Bumper Co.,** Los Angeles.

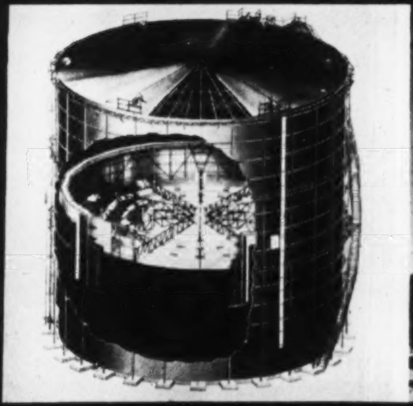
K. Campbell Dalglish was elected president, **Pitney-Bowes of Canada Ltd.,** Toronto, Ont. He succeeds **Walter H. Wheeler Jr.,** elected to the newly created office of chairman of the board. Mr. Dalglish joined the postage meter and busi-

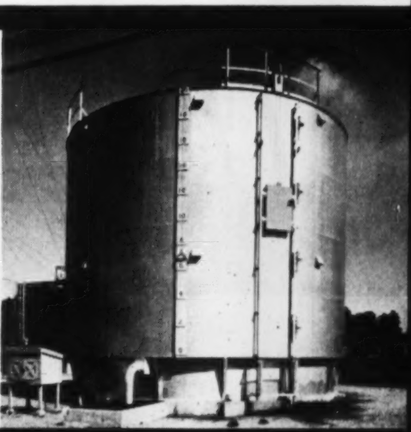
simple! proved in use!

Wiggins Gasholder

BY GENERAL AMERICAN





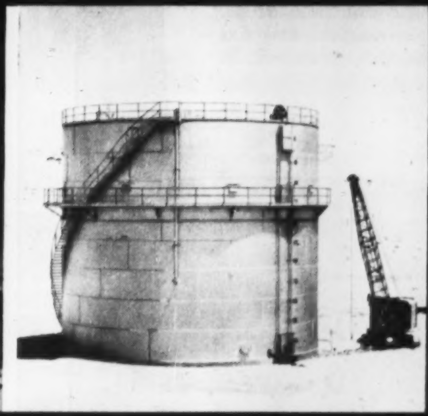


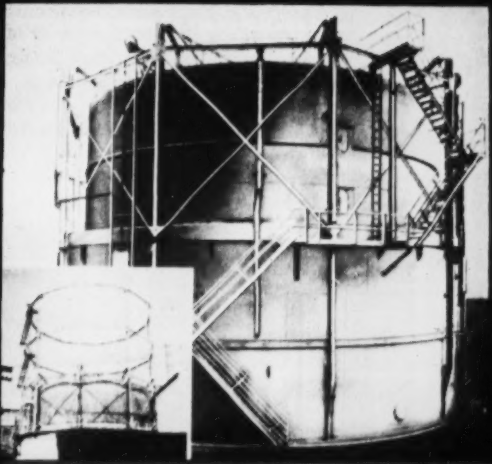
The only gasholder that uses

NO WATER
NO TAR
NO GREASE

The only gasholder that assures you

NO WEATHER WORRIES
NO OPERATING COSTS
NO MAINTENANCE PROBLEMS





GENERAL AMERICAN

WIGGINS
VAPOR SEALS
GENERAL
AMERICAN
TRADE MARK

TRANSPORTATION CORPORATION

General Sales Office: 135 South La Salle Street
Chicago 90, Illinois
Offices in principal cities

You can convert your old style gasholders to get the Wiggins advantages

Be sure to get the performance record on the only modern gasholder before you plan any gasholder construction.

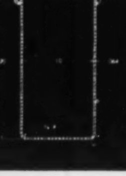
"ALUMINUM FORMING"

Technical Handbook

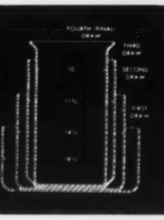
ALUMINUM
forming
REYNOLDS ALUMINUM
REYNOLDS METALS COMPANY

Write Today! Free when requested on business letterhead

Everyone who works with aluminum should have this new 148 page handbook, the latest addition to the Reynolds Technical Library. "Aluminum Forming" was published so that design engineers and plant supervisors could have, in a single volume, complete information on the proper techniques for working aluminum. Design and fabricating practices with aluminum are not always like those for other metals. So, in some cases modifications or even special procedures may be required. This handbook fully explains all these procedures and includes more than two hundred and thirty drawings and photographs, twenty-two tables and thirty-two formulas.



These are typical of the many illustrations in "Aluminum Forming": Left, drawn shell of 3S-O aluminum. Right, various stages of drawing necessary to produce shell. (Book includes formula for estimating number of draws.)



See "Mister Peepers" Sundays, on NBC-TV. Consult local listings for time and station.

For your free copy of the valuable Forming handbook plus a complete index of Reynolds technical literature, write on business letterhead (otherwise price of book is $1.00). Reynolds Metals Company, 2520 South Third Street, Louisville 1, Kentucky.

REYNOLDS ALUMINUM

MODERN DESIGN HAS ALUMINUM IN MIND

ness machines firm, an affiliate of Pitney-Bowes Inc., in 1925 and became vice president and general manager in 1941.

Charles W. Stone was elected executive vice president, **Interstate Drop Forge Co.,** Milwaukee. He had been vice president-sales since 1952.

A. A. Throckmorton was appointed sales manager, **General Smelting Co.,** Philadelphia. He was with Kaiser Aluminum & Chemical Sales Inc., recently serving that firm as manager of its alloys division.

Industrial Brownhoist Corp., Bay City, Mich., appointed **W. W. Mossgrove** assistant to the sales manager.

Arthur H. Kirkpatrick was promoted to the newly created position of special project engineer at **Frederic B. Stevens Inc.,** Detroit. **Elmer F. King** was made a metal finishing sales representative in the New England area.

John A. Drake heads the newly formed market research department of **Borg-Warner Corp.,** Chicago. He was previously director of marketing for the Norge Division.

Dr. Warren C. Lothrop was appointed a vice president of **Arthur D. Little Inc.,** Cambridge, Mass. He will have charge of the research and development division.

Joseph E. Carney replaces **Aaron B. Bagsar,** retired, as chief metallurgical engineer of **Sun Oil Co.,** Philadelphia.

CLIFFORD G. STROTE
. . . American Chain purchasing director

Clifford G. Strote was appointed director of purchases of **American Chain & Cable Co. Inc.,** Bridgeport, Conn., and associate companies. For the last 12 years he served U. S. Steel Corp. in executive purchasing assignments.

J. V. Honeycutt, vice president-sales, and **K. L. Griffith,** general manager-sales, were elected directors of **Bethlehem Steel Corp.,** Bethlehem, Pa. They succeed **P. Mackall** and **J. H. Ward.**

Raymond Szymanowitz, vice president, was elected executive vice president of **Acheson Industries Inc.,** New York.

Philip A. Larnino joins **Four Wheel Drive Auto Co.,** Clintonville, Wis., as manufacturing manager.

THOMAS B. HERNDON
. . . a sales manager at National Supply

Thomas B. Herndon was appointed sales manager, production equipment, **National Supply Co.,** Pittsburgh.

A. S. Kromer was made general manager, Calumet Division, **Calumet & Hecla Inc.** He assumes his new duties at the division headquarters in Calumet, Mich., on Mar. 15. Mr. Kromer will succeed **Orson A. Rockwell,** resigned to join Eagle-Picher Co. Mr. Kromer is manager of Calumet & Hecla's Wolverine Tube Division plant in Decatur, Ala.

Murray M. Hemming, formerly with the steel jobbing firm of Tayler & Spotswood Co., joined **Lawrence-Totten Co.** as manager of its San Francisco office.

OBITUARIES . . .

John E. Scully, vice president and treasurer, **Bostitch Inc.,** Westerly, R. I., died Feb. 5.

Irving Kaplan, 53, vice president, **M. S. Kaplan Co.,** Chicago, died Feb. 3 in Florida.

Neil E. Salsich, 70, vice president and director of **Jeffrey Mfg. Co.,** Columbus, O., died Feb. 2.

C. F. Braun, founder and president, **C. F. Braun & Co.,** Pasadena, Calif., died Feb. 3.

John Dunphy, 71, with **Yale & Towne Mfg. Co.** for many years, and recently sales representative for the Yale lock and hardware division in Cincinnati, died Feb. 1.

Karl N. Searles, 71, retired assistant district manager, Buffalo plant, **American Car & Foundry Co.,** died Jan. 31.

Hobart A. Green, 56, president, **Royal Metal Mfg. Co.,** Chicago, died Jan. 29.

Andrew T. Lamb, sales representative in nine midwest states for **Buffalo Forge Co.,** Buffalo, died Jan. 29.

Thomas R. Heyward Jr., chairman of **Duraloy Co.,** Scottdale, Pa., died Feb. 1. He founded the company in 1934 and served as president until two years ago.

William P. Day Jr., 51, vice president, **International Vibration Co.,** Cleveland, died Feb. 7.

H. W. Bouley, assistant chief engineer, **Consolidated Vultee Aircraft Corp.,** San Diego, Calif., division, died Jan. 24.

Charles H. Daus, 54, sales promotion manager in New England for **Westinghouse Electric Corp.,** died Jan. 31 in Hartford, Conn.

Willard S. Girvin, 60, chief metallurgist for **American Brass Co.,** Waterbury, Conn., died Feb. 1.

Molybdenum Output Soars High in the Rockies

Molybdenum mine at Climax, Colo., is now the largest underground mine in North America, claims Climax Molybdenum Co., New York. Over 8 million tons of ore will be extracted from this mine in 1954. Daily production rate at this property is 27,000 tons of molybdenum ore, compared with the previous record of 24,500 tons of coal held by United States Steel Corp.'s Robena mine in Pennsylvania. Site of Climax's mine, 11,400 ft up in the Rockies, is pictured above

Ing-Rich Enters New Field

Facilities are adapted to production of porcelain enameled aluminum on large-scale basis

ONE of the largest and oldest enameling firms in the country has completed a modernization program which will enable it to produce up to 25,000 sq ft monthly. Ingram-Richardson Mfg. Co., Beaver Falls, Pa., has adapted some of its facilities to the production of porcelain enameled aluminum for achitectural and other purposes. The company also will continue to make enameled steel.

While some porcelain enameled aluminum has been produced on an experimental and small volume basis, Ing-Rich is one of the first companies to take steps to handle large-scale production.

Close Control — Production of porcelain enameled aluminum requires far more critical control at each step in the manufacturing process than does porcelain enameled steel, says J. F. Ingram, president. To permit production of the new material, changes had to be made in some of the company's furnaces, grit grinding equipment, spraying mechanisms, pickling tanks, drying procedures and laboratory equipment.

The changes in furnace design were among the major alterations necessary. Porcelain enameled steel is fused at furnace temperatures in the 1500° F to 1600° F range, but the same process is done with aluminum at temperatures ranging from 980° F to 1000° F. However, temperatures throughout the entire furnace must be controlled to very close limits, with a tolerance of only plus or minus 5° F permissible.

Edgcomb Opens Warehouse

Edgcomb Steel Co., Philadelphia, opened a warehouse and office in York, Pa. A complete inventory of 4500 tons of metals will be maintained.

Builds Motor Plant on Coast

U. S. Electrical Motors Inc., Los Angeles, is constructing an $8-million plant in Anaheim, Calif. The first unit will house Defense Products Division for the building of aircraft electrical motors. Principal products of the company are variable-speed motors, internally geared motors, explosion-proof and general purpose motors.

Purchasing Agents To Meet

Purchasing Agents Association of Chicago will conduct its 20th annual Products Show at Hotel Sherman, Feb. 16-18. Capacity of the exhibition space of 186 booths has been sold out for some time. Show hours are from 12 noon to 10 p.m. The event will end with the customary banquet on the third day.

Eaton Buys Spring Perch Co.

Eaton Mfg. Co., Cleveland, acquired all the common stock of Spring Perch Co., Lackawanna, N. Y., producer of chassis springs, principally for trucks, and will operate it as a subsidiary. Eaton's Spring Division in Detroit is a large manufacturer of coil and leaf chassis springs. Eaton plans to improve and expand existing facilities in Lackawanna to take care of future potential requirements that cannot be handled at the Detroit plant.

F. I. Goodrich, general manager of Eaton's Spring Division, will be president of the newly acquired company; E. H. Lindeman, manager of the leaf spring department, will be vice president; and J. E. Fawcett, resident manager.

Youngstown Firm Names Agents

Roll Formed Products Co., Youngstown, appointed the following district representatives: Towle & Son Co., Philadelphia; Richard S. Dirkes, Brooklyn, N. Y.; Ferris & Co., San Gabriel, Calif. Roll Formed Products Co. makes special and standard shapes, tubing, angles and channels from ferrous and nonferrous metals.

Fellows Builds Additions

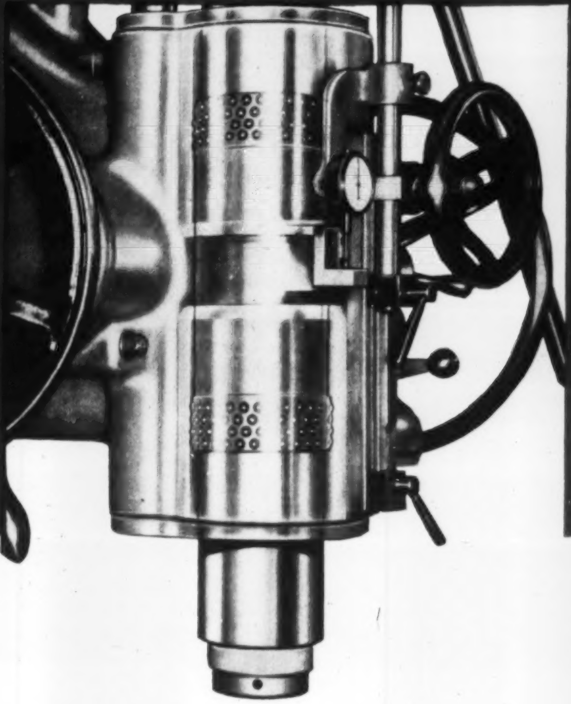
March-April target date has been set for completion of two plant additions at Fellows Gear Shaper Co., Springfield, Vt. Company is adding 26,200 sq ft for machining of large castings and assembly of its 120-in. gear shaper and 10-spindle ro-

Always Accurate

TODAY TOMORROW INDEFINITELY

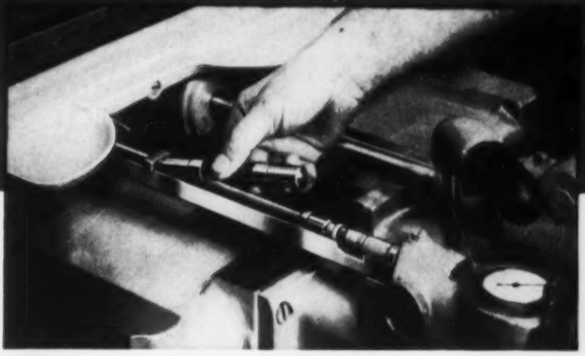
PRATT & WHITNEY

END MEASURE JIG BORERS



Because OF THE EXCLUSIVE BALL ROLL QUILL

Plus THE FUNDAMENTALLY CORRECT END MEASURE SYSTEM



This construction retains accuracy, permits heavy lateral loads, and reduces maintenance. Two hardened and ground steel liners are deep frozen for setting into the head, and later lapped in place. The spindle is hardened and ground, and then draw polished by hand. Super-precision balls, held in a non-metallic cage, are selected for absolute uniformity. Thermal expansion after assembly preloads the bearings to a total pressure of over 8000 pounds. After lubrication and permanent sealing the quill is ready for use, and then is exceptionally accurate, operates with minimum wear, yet glides smoothly enabling an operator to feel a ⅛" drill feeding in the work.

Write on your Company letterhead for Bulletin No. 540-1

This system is the basis for all others. Every mechanic knows the instruments thoroughly — precision end measures, inside micrometers, and dial indicators.

Each slide has a built in "zero point" indicator which is set to zero after the table is locked to bore the first hole. To locate the next hole, end measures are inserted for the even inches, the inside micrometer set for the inch fractions (accurate to .0001") and the table moved until the "zero pointer" reads exactly right.

THREE SIZES . . .

- THE **1½ B** — compact and versatile — table size 12" x 24".
- THE **2 A** — practical tool room size — table size 22" x 44".
- THE **3 B** — large capacity powerful unit — table size 24" x 54".

PRATT & WHITNEY
JIG BORERS

Circular
No. 540-1

PRATT & WHITNEY
DIVISION NILES-BEMENT-POND COMPANY
WEST HARTFORD 1, CONNECTICUT, U.S.A.

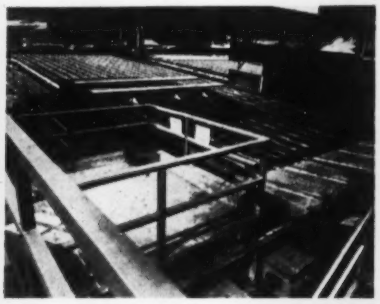
First Choice P&W *for Accuracy*

Branch Offices . . . BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DALLAS (The Stanco Co.) • DETROIT • HOUSTON (The Stanco Co.) LOS ANGELES • NEW YORK • PHILADELPHIA • PITTSBURGH • ROCHESTER • SAN FRANCISCO • ST. LOUIS • EXPORT DEPT., WEST HARTFORD

MACHINE TOOLS • CUTTING TOOLS • GAGES

Treadwell

Courtesy Jones & Laughlin Steel Corp



Bar and billet mill cooling beds capable of handling up to and including 5″ square bars or billets up to and including 35′ in length.

Beds are approximately 120′ in length overall.

Bars or billets can be deposited on the beds alternately as fast as they are delivered from the mill.

BETTER
GRADE
MACHINERY

Treadwell Engineering Company

EASTON, PA.

SALES AND ENGINEERING OFFICES:

208 S. LA SALLE STREET
CHICAGO 4, ILL.
CEntral 6-9784

140 CEDAR STREET
NEW YORK 6, N. Y.
WOrth 4-3344

1015 FARMERS BANK BLDG.
PITTSBURGH 22, PA.
ATlantic 1-2883

tary machine and for metallurgy and testing operations. Office space will be increased by 7000 sq ft by adding a new wing to an existing building.

Railway Supply Firm Expands

Morrison Railway Supply Corp., Buffalo, will construct a plant adjacent to its facilities in that city at a cost of about $150,000. The company also has arranged for use of some facilities at International Railway Car Co.'s plant in Kenton, O., for the reconditioning of cars for Morrison plan lessees.

Schedules Plant Opening

Burlington Aluminum Inc., a subsidiary of Featherweight Aluminum Co., Montreal, Que., will open its plant in Burlington, Vt., soon. It will fabricate aluminum golf carts initially and will eventually manufacture aluminum outdoor furniture.

Barth Stamping Changes Name

Barth Stamping & Machine Works Inc., Cleveland, changed its name to Barth Corp. Glenn A. Barth is president.

Holmberg Moves Plant

August W. Holmberg & Co. Inc., producer of metal stampings, tools and dies, moved to 133-31 39th Ave., Flushing, N. Y. Many new precision machine tools have been added.

Will Make Nickel Sulphate

Arundel Chemical Co., Baltimore, has equipped a section of its plant for the manufacture of nickel sulphate for Republic Chemical Corp., New York. Production is already under way.

Continental Can Names Agent

Continental Can Co., New York, appointed Hugh Kelleher & Associates, San Francisco, as its West Coast agents under a new distribution plan whereby the company's metal pantryware will be sold to jobbers, regional chain stores and department stores by manufacturers' agents.

Vacuum Metals Ups Output

Firm responds to increased demand for vacuum-melted high-temperature alloys

VACUUM METALS CORP., Cambridge, Mass., is increasing production of vacuum-melted high-temperature alloys and is expanding production of high-purity nickel alloys for electronic tube construction. The corporation is a wholly owned subsidiary of National Research Corp., Cambridge.

The first commercial quantity orders were received from jet engine manufacturers. The application of this vacuum-melted product gives promise of not only better performance of the alloy in the engine, but also increased ease of fabrication and higher yields. Since one of the principal obstacles in the way of continued improvement in gas turbine performance is the requirement for materials with improved high-temperature properties, this development is of considerable importance.

Interest Rises — During the past year, interest has increased steadily in vacuum-melted high-purity nickel, copper and iron and dilute alloys of these metals for electronic tube components. In the first half of 1954, some of the alloys which have been produced only on an experimental basis are being standardized for commercial production.

During the past six-month period, many tons of Ferrovac-52100, a vacuum-melted low-alloy steel, have been produced for manufacturers of high-quality ball bearings. Other vacuum-melted alloy steels for applications requiring high fatigue strength are under test by manufacturers.

Fastenermaker Moves Branch

H. M. Harper Co., Morton Grove, Ill., moved its New York city operation to a newly constructed, 15,000-sq-ft building at 225 Hoyt Ave., Mamaroneck, N. Y. The branch office and warehouse will carry stocks of bolts, nuts, screws, washers, rivets and other corrosion-resistant fastenings produced by this company. A special service department is equipped with slotting, threading, cutting and other equipment to handle small rush orders that require special handling.

Hubbert Enlarging Facilities

D. H. Hubbert & Son Inc., Baltimore, awarded a contract for a 4000-sq-ft manufacturing addition. One of its principal products is seamless drawn steel jacketed kettles, used by canners.

Reynolds Metals Names Agent

Reynolds Metals Co., Louisville, appointed MacArthur Co., St. Paul, as a distributor of its architectural aluminum.

Size Control Opens Office

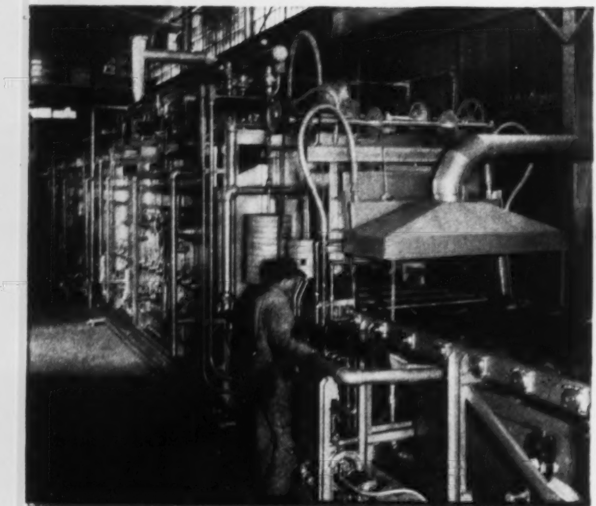
Size Control Co., a division of American Gage & Machine Co., Chicago, in co-operation with Sterling Sales Inc., opened a sales office at 417 Cambridge St., Allston, Mass. In addition to full representation of Size Control's line of gages and lapping machines, this office represents Wheel Trueing Tool Co., Bloomfield, N. J.; Worcester Taper Pin Co., Worcester, Mass.; Firth Sterling Inc., Pittsburgh; and Ettco Tool Co. Inc., Brooklyn, N. Y.

Size Control also appointed Bert

(*Please Turn to Page* 102)

GE Plant Opens in South

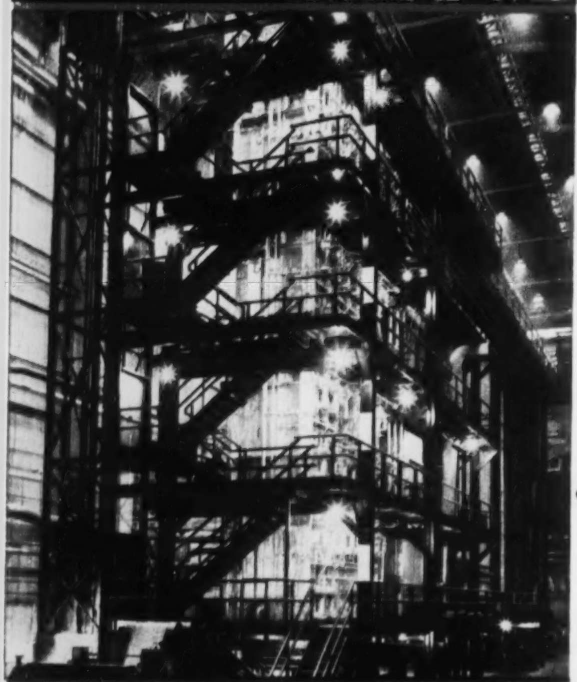
First unit to roll off the production line of General Electric Co.'s nearly-completed $25-million plant at Rome, Ga., was this 35,300-lb transformer. The plant, to be completed this spring, is the first GE ever built to mass-produce small power transformers



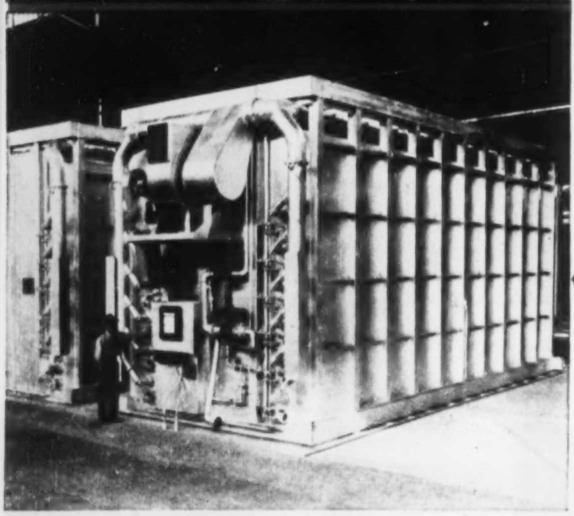
The first continuous carbon restoration annealing of steel was carried out in this Surface roller hearth furnace. Enriched RX atmosphere is the recarburizing medium; NX atmosphere is for surface protection.

This is a Surface HNX Generator—one of the many types of generators which Surface Combustion supplies to help the industry deliver better finished steel.

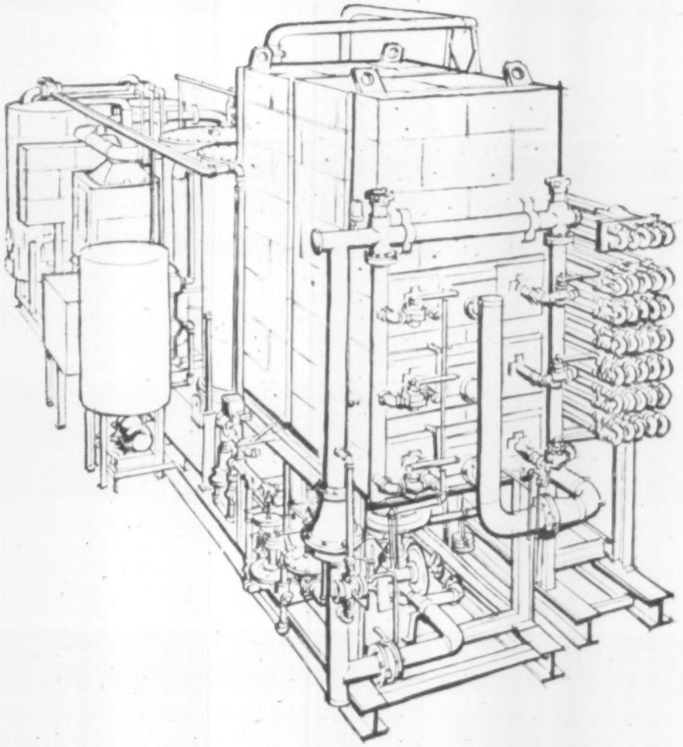
SALES TOOLS



This vertical strand furnace is used for continuous bright annealing of strip for tin plating. Either NX or HNX gas can be used for the prepared atmosphere.



Batch bright annealing coiled strip is carried out in these lift type cover furnaces. This installation uses NX protective atmosphere.



ON THE MILL FLOOR

New markets open and customers are retained by developments on the mill floor. Steel surface quality, a major factor in customer acceptance, can be economically controlled through prepared atmospheres.

Many steelmakers have eliminated discoloration, "decarb," scale and other surface defects by using Surface Combustion prepared atmospheres. They have improved quality control, cut finishing costs by carbon correction and bright annealing, continuous or batch . . . clean hardening . . . clean annealing for galvanizing or tin plating.

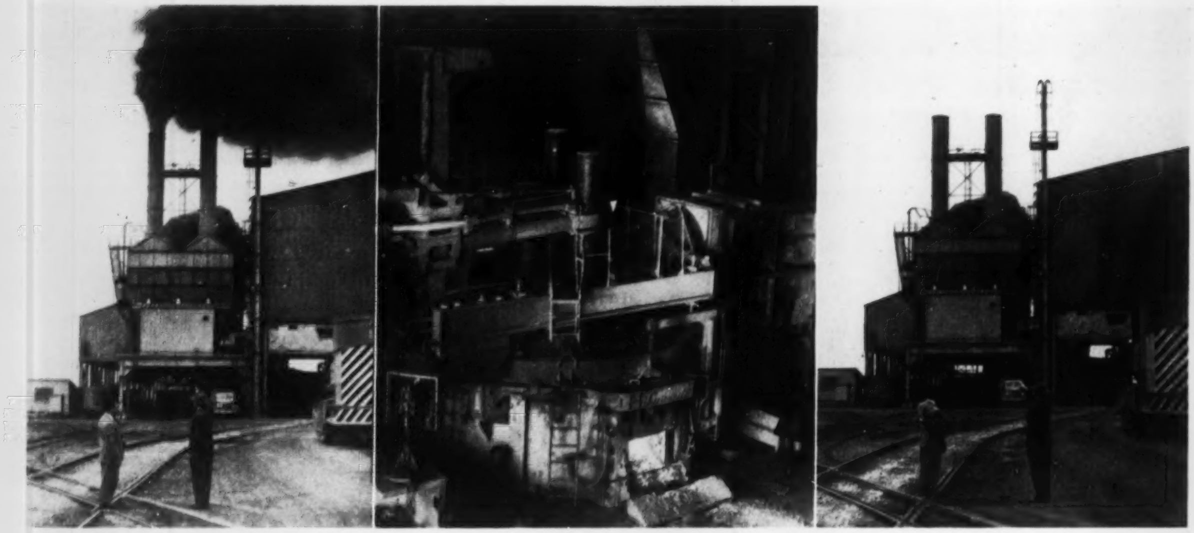
Their customers know that this steel means lower tool and die costs, fewer rejects—more steel, in effect, for their dollar.

'Surface' builds many types of atmosphere generators, including RX, DX, NX, HNX, and AX generators for the steel industry. Literature Group S53-3 will show you how to get the right atmosphere for satisfied customers and new markets.

Surface
STEEL MILL FURNACES

SURFACE COMBUSTION CORPORATION • TOLEDO 1, OHIO

One-way fired soaking pits • Billet reheating furnaces • Slab heating furnaces • Continuous type, controlled atmosphere strip annealing and normalizing furnaces • Controlled atmosphere annealing covers for wire and rod • Controlled atmosphere annealing covers for coil and sheets • Continuous furnaces for heat treatment of steel plate • Controlled atmosphere furnaces for carbon correction in high alloy rod and bar stock • Continuous type bright annealing and normalizing furnaces • Prepared gas atmosphere generating equipment • Pit type convection furnaces for rod annealing • Stress relief furnaces • Wire patenting furnaces



Smokeless Stacks Win Friends for Bethlehem Pacific

Bethlehem Pacific Coast Steel Corp. has licked the smoke problem at its Los Angeles plant by installing electrostatic precipitators and special electric furnace roof duct connections, center. Difference made by the installation, which removes six to eight tons of soot daily, is dramatically illustrated above by before and after scenes

---

(Continued from Page 99)

Lewyn, Atlanta, as its representative in Georgia, Alabama, Florida and the eastern half of Tennessee.

Offers Aluminum Billets

An aluminum billet casting plant, containing 13,000 sq ft of floor space, was completed by Michael Flynn Mfg. Co., Philadelphia, manufacturer of Lupton metal windows. Output of the plant will be available to the metalworking industries. It supplements aluminum extrusion facilities which Flynn made available to industry after World War II.

Aluminum Fabricator Expands

One of Britain's largest aluminum fabricators is expanding its operations into Canada. High Duty Alloys Ltd., specialist in temperature alloys, opened a sales office in Toronto and may establish manufacturing facilities. It would engage in forging, casting and extrusion work for defense and commercial applications.

President of the newly formed subsidiary, High Duty Alloys (Canada) Ltd., is Crawford Gordon Jr., also president of A.V. Roe Canada Ltd. Both firms are part of the Hawker Siddeley Group, which represents 40 per cent of the British aircraft industry and forges compressor and turbine blades for virtually all jet engines built in the United Kingdom today. Among the company's commercial products are parts for washing machines, typewriters, busses, railroads and ships. It also supplies the auto, building, electrical and mining industries.

The Hawker Siddeley Group recently arranged funds for purchase by Avro Canada Ltd. of the multimillion dollar government-owned jet engine plant, Malton, Ont., which Avro built and operated for the government on a fee basis.

Fram Builds Office Building

Fram Corp., manufacturer of automobile and industrial filters, Providence, R.I., is constructing a new office building in East Providence, R. I., to cost $500,000.

Universal Rebuilding Plant

Complete rebuilding of a 47-year-old cement plant was highlighted recently by the shutdown of an old raw material mill and beginning of operations at a new, smokeless modern facility. Universal Atlas Cement Co., Universal, Pa., subsidiary of U. S. Steel Corp., is rebuilding its plant to reduce smoke and dust emissions.

When this program is completed late in 1955, all smoke and dust from plant operations will be screened through mechanical dust collectors and electrostatic precipitators. The coal mill, raw mill, kilns and finishing mill will be replaced by new units. Some 38 smokestacks will be eliminated.

Optical Firm Names Agent

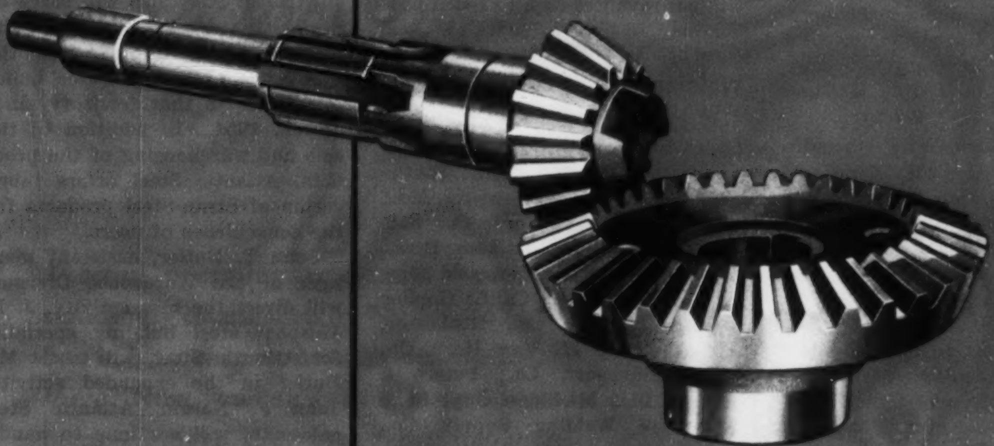
Bausch & Lomb Optical Co., Rochester, N. Y., appointed DoAll Co., Des Plaines, Ill., as exclusive sales representative for its contour measuring projectors and toolmaker's microscopes. In addition, DoAll will distribute Bausch & Lomb stereomicroscopes, shop microscopes and Brinell microscopes on a regular dealership basis.

Neptune Meter Buys Revere

Neptune Meter Co., New York, manufacturer of water meters, acquired Revere Corp. of America, Wallingford, Conn., maker of precision instruments for aviation and industry. Revere also makes electronic toll recording equipment, thermocouples, harnesses and special wiring for measurement and control of temperatures. Management, production and sales policies of Revere will remain unchanged, says D. E. Broggi, Neptune president.

GEARS

for every purpose



Skilled Illinois Gear craftsmen are at your command to produce gears for every purpose—from gears rotating the massive, grinding weight of 100 ton shovels to gears controlling the tension of huge cylinders that speed delicate tissues through paper mills at thousands of feet per minute.

With the finest precision gear making equipment available *anywhere* Illinois Gear can fill your orders *on time* and meet your most demanding specifications.

Send *your* next order to Illinois Gear!

ILLINOIS GEARS
Reg. U.S. Pat. Off.

Gears for Every Purpose ... one gear or 10,000 or more

ILLINOIS GEAR & MACHINE COMPANY

2108 NORTH NATCHEZ AVE. • CHICAGO 35, ILLINOIS

Jessop Steel Expanding

Intensifies sales effort in Michigan, Illinois and Ohio and enters Canadian market

JESSOP STEEL CO., Washington, Pa., is making a new drive for business in three states with acquisition of Jessop Steel Sales Co., Detroit, an independently-owned warehousing organization.

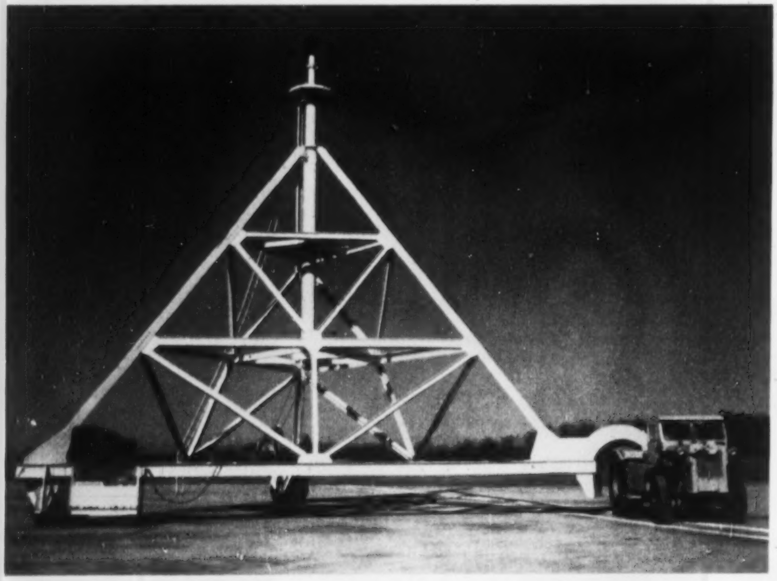
The Detroit company's operation will be expanded to include the distribution of Jessop products in Toledo, O., Cleveland and Chicago, as well as the state of Michigan. The company will operate as a division of Jessop Steel Co. under the direction of John R. Harbaugh, assistant vice president in charge of sales, who is moving to Detroit. Manager of sales will be A. J. Scheirer.

Canadian Plant—The expanded operation in Michigan, Ohio and Illinois caps a series of moves which has seen Jessop Steel enter the Canadian market with construction of a plant at Wallaceburg, Ont. The first 8000-sq-ft unit of the plant was completed last month, and warehousing activities are under way. The Canadian operation is called Jessop Steel of Canada Ltd. It stocks precision ground flat steel, high-speed tool bits, carbon and alloy steels, oil hardened die rings and stainless strip and sheet. This plant will begin production soon on such specialty products as cast-to-shape items, ground tool steels and tool bits. T. N. Thomas is manager of sales; Arthur Brice, plant superintendent.

Jessop Steel's foreign operations subsidiary, Jessop Steel International Corp., recently concluded a technical assistance agreement with Stinox, a group of six major French steel producers. These companies will trade "know-how" so that the French can enter the stainless-clad steel field for the first time. Jessop will get royalties on all French production.

Welding Products Names Agents

Welding Products Division, A. O. Smith Corp., Milwaukee, appointed the following distributors: Southern Oxygen Co., Bladensburg, Md.; Structural Steel & Forge Co., Salt Lake City, Utah; Balaam Bros., Emeryville, Calif.; Aeroweld Supply Co., San Diego, Calif.; Gopher Welding Supply Co., Rochester, Minn.; Oliver H. Van Horn Co. Inc., Shreveport, La.; Peters & Marske Inc., Michigan City, Ind.; Interstate Welding Supply Co., Cambridge, Mass.; and Smith Carbonic & Oxygen Co. Inc., New York.



How Many Triangles in Airship Mooring Mast?

The new-type airship mooring mast, shown above, was developed by Goodyear Aircraft Corp., Akron. Use of this mast makes ground handling of nonrigid airships easier and safer. Direct linkage of the mobile mast with diesel-powered tractor, by a unique gooseneck draw-bar assembly, has increased tractive power and enhanced maneuverability. Formerly, masts were separate from the tractor

Atlantic Steel Gets Agency

Atlantic Steel Co., Atlanta, was appointed distributor in parts of four southern states for steel building products manufactured by Great Lakes Steel Corp., Detroit. The firm will distribute steel Quonset and Long-Span buildings, Stran-Steel nailable framing and structural sections in 101 Georgia counties, 33 Alabama counties, 51 middle Tennessee counties and 3 counties in South Carolina.

Atlantic Steel also will serve as dealer for the products in the Atlanta area. It has been the Quonset and Long-Span steel building dealer in that territory since March, 1951. In addition to the sale and warehousing of the products, Atlantic Steel offers fabrication of Stran-Steel products for the convenience of users.

John T. Butler, assistant manager of the Warehouse Division, will direct the new activity. J. D. Murphy, steel building specialist for Atlantic Steel, will assist Mr. Butler in the expanded activity. John F. Nelson, Atlantic Steel salesman, will continue to handle sales of the products. Three members of Mid-South Steel Co., former distributor, have joined Atlantic Steel Co.

Robert H. Taylor has been named engineer for the Stran-Steel Division.

National Cylinder Reorganizes

National Cylinder Gas Co., Chicago, simplified its corporate structure. Two of four wholly owned subsidiaries now operate as divisions, and the corporate charters of the remaining two have been surrendered and their operations taken over by the parent company. Tube Turns Inc., Louisville, manufacturer of welding fittings and forgings, is now the Tube Turns Division. Pennsylvania Forge Corp., Philadelphia, producer of flanges, rings and heavy forgings, is a division known as Pennsylvania Forge Co.

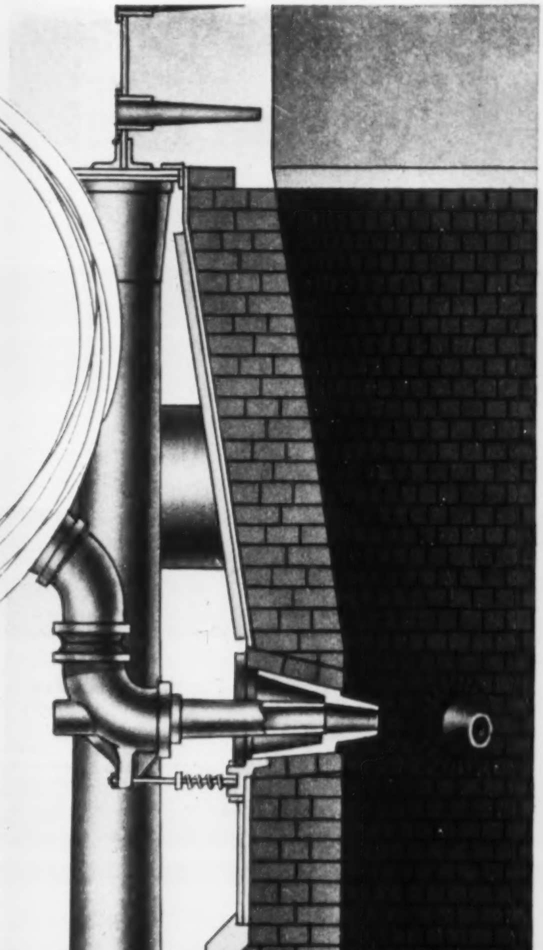
Hollup Corp., Chicago, and National Cylinder Gas Co. — Pacific Coast have been dissolved.

SAVE ALL THE WAY WITH

NATIONAL

TRADE-MARK

CARBON BLAST FURNACE LININGS



Record operating economies — so outstandingly established by "National" carbon in blast furnace hearths—*needn't stop there!* Now you can get the same advantages — longer life, lower maintenance, smoother operation—with carbon linings in blast furnace walls, in tuyere and in bosch sections.

Present day economics indicate now, more than ever, a need for carbon "all the way". Let's talk it over in terms of *your* operation!

The term "National" is a registered trade-mark of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.
District Sales Offices: Atlanta, Chicago, Dallas,
Kansas City, New York, Pittsburgh, San Francisco

OTHER **NATIONAL CARBON** *PRODUCTS:*

ELECTRIC FURNACE ELECTRODES · CARBON BRICK AND RAMMING PASTE · TROUGH LINERS · MOLDS AND MOLD PLUGS · SKIMMER BLOCKS · SPLASH PLATES · TANK LININGS AND HEATERS · HEAT EXCHANGERS AND PUMPS · BRUSHES FOR MOTORS AND GENERATORS

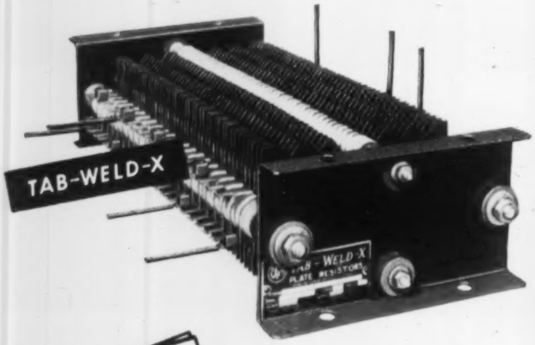
low priced yet...it includes Preventive Maintenance

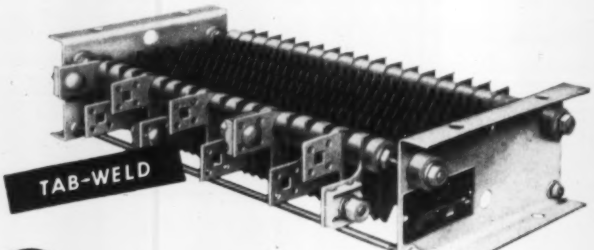
TRADE MARK
E C & M
TAB WELD
PLATE RESISTOR
PATENT NO 2,376,056

"F. O. B." *(FREE-OF-BURNING)*

Resistors get little attention, because they are usually mounted overhead or in similar hard-to-reach locations. Clamping-nut pressure slackens under alternate heating and cooling. Formerly, under the reduced pressure, OHMIC value changed, burning occurred and often was *not* noticed until damage took its toll.

But — note how resistor troubles are now eliminated in the EC&M TAB-WELD design! The current-carrying path is continuous — and is *independent* of end clamping-nut pressure. Convenient tap-plates simplify tap-shifting—make possible small adjustments in resistance value, because plates are closely spaced. Also, these alloy-steel resistors are corrosion-resisting—and have negligible resistance-change between cold and maximum working temperatures.





SPECIFY BULLETIN 942 **EC&M Welded Plate Resistors**

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET • CLEVELAND 4, OHIO

STEEL

February 15, 1954

Technical Outlook

NON-SLIP STRIP— Electrolytic tin platers, annealers and galvanizers can forget their roll slippage problems, and the attendant surface fogging of the high-finish steel strip. B. F. Goodrich has a new Strip-Grip cover compound with a smooth, regular ground surface. Roughing or dressing of the surface is completely eliminated. Big claim is that it will boost percentage of strip that can be sold as first quality product.

MORE PNEUMATICS— With rapid advances made by gas turbine engines in aviation has come increased interest in pneumatic systems for auxiliary aircraft power. Source of air supply is the jet's compressor, and system is not confined to power plant area as with the present exhaust systems. Rohr Aircraft Corp., in its annual report, predicts that pneumatics could easily become a more lucrative field than exhaust system manufacturing has been in the past.

GROWING RESISTANCE— Despite a growth from $8 million to approximately $50 million since 1941, many people feel that resistance welding is still in its infancy. Sciaky Bros. Inc., Chicago, convinced that further growth is hampered by lack of technical information, will announce shortly the opening of a new research plant. Object: Fundamental research on resistance welding of all metals and eventually a thorough exploration of design considerations.

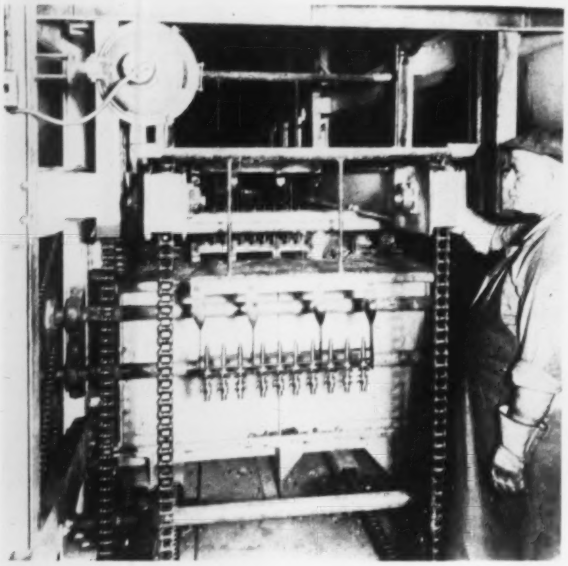
NO FINGERPRINTS . . NO FIRES— Originally developed as a high flash-point fingerprint remover to conform to military specification MIL C 15074 A, Klad Kote 356, manufactured by R. M. Hollingshead Corp., Camden, N. J., offers another plus. With its flash point of 240°F and 30-day protective feature, most users are finding it unnecessary to slush metal parts for inter-shop corrosion protection. Elimination of slushing operation not only reduces costs but cuts handling to a minimum.

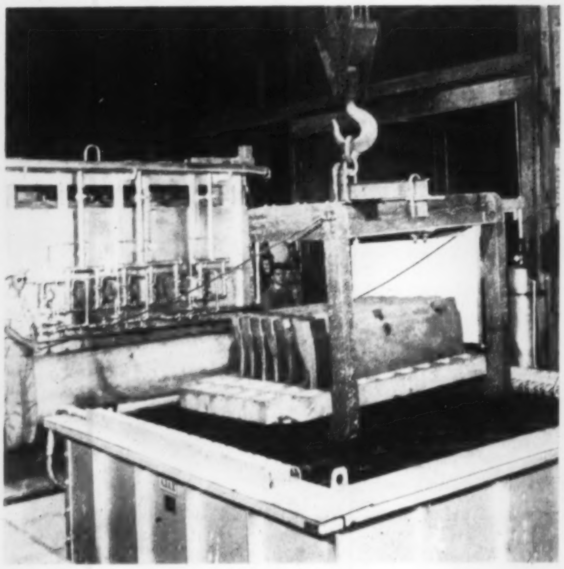
ULTRASONICS AHEAD— An increasing percentage of heavy forgings at a large turbine and generator manufacturer's plant get a complete inspection of the whole volume rather than just the bore and external surfaces. It's eliminating a lot of the center boring of turbine spindles and rotor forgings by telling, in advance, whether defects can be removed by the boring or whether part should be rejected immediately.

FORMING— Cold forming, prenecking and spinning are combined to produce small, high pressure cylinders at Worcester Pressed Steel Co., Worcester, Mass. Triple process (compared to the all-spin technique) is said to achieve closer tolerances, weight savings and service at higher temperatures.

COMPETITIVE ALLOYS— New range of copper-manganese-tin alloys is described in a Tin Research Institute bulletin recently published. Alloys meet the demand for white metal with good mechanical properties at a competitive price with nickel silver. They can be cast, forged, rolled, stamped, etc., and are reported satisfactory as a base metal for plating.

ALCLAD ENGINE BEARINGS— General Motors researchers have come up with a new aluminum-clad steel bearing that should bring advances in engine and machinery design. After a strong ductile bond of aluminum is put on the steel, thin layer of babbitt is electroplated onto the aluminum to form actual bearing surface. Life is six to ten times that for plain babbitt bearings, thanks to anti-scoring properties of babbitt in combination with corrosion resistance of the aluminum.


One operator at loading and unloading station of a mechanized unit of the Jack Rabbit type handles carburizing and martempering of outboard motor crankshafts with only one heating of the work required


Nine-ton charge of cast steel crusher jaw plates entering isothermal salt bath quench furnace — final step in martempering operation. This treatment gives full hardness with minimum residual quenching strains

Salt Baths . . . VERSATILE PERFORMERS ON THE HEAT TREATING TEAM

For heating and cooling metals the salt bath furnace has a wide field of usefulness. Here's a rundown on its basic characteristics that back up present day applications

By L. B. ROSSEAU
Vice President
Ajax Electric Co.
Philadelphia

THE SALT BATH as a method of heating and cooling metals has certain well established characteristics. They are the foundation of its wide acceptance.

The modern salt bath furnace was introduced to industry about 15 years ago. Today, in this country, there are some 4000 in operation. Many use connected loads of 1000 kilowatts and more; some have loads of over 2000 kilowatts.

Significant also is the increase in average size of furnace which has occurred in the last 10 years. Records of the Ajax Electric Co. show that the average size of salt bath furnaces sold during 1942 was 50 kilowatts, while by 1952 it was 100 kilowatts.

Here's How—Salts, while insulators in the solid state, are good resistors in the fused state. Operating principle of the electrode-type, salt-bath furnace is to generate heat directly in the salt by utilizing its resistance to the passage of current. Potential is applied to the molten salt by electrodes. They are connected to the secondary of special, multiple-voltage, air-cooled transformers.

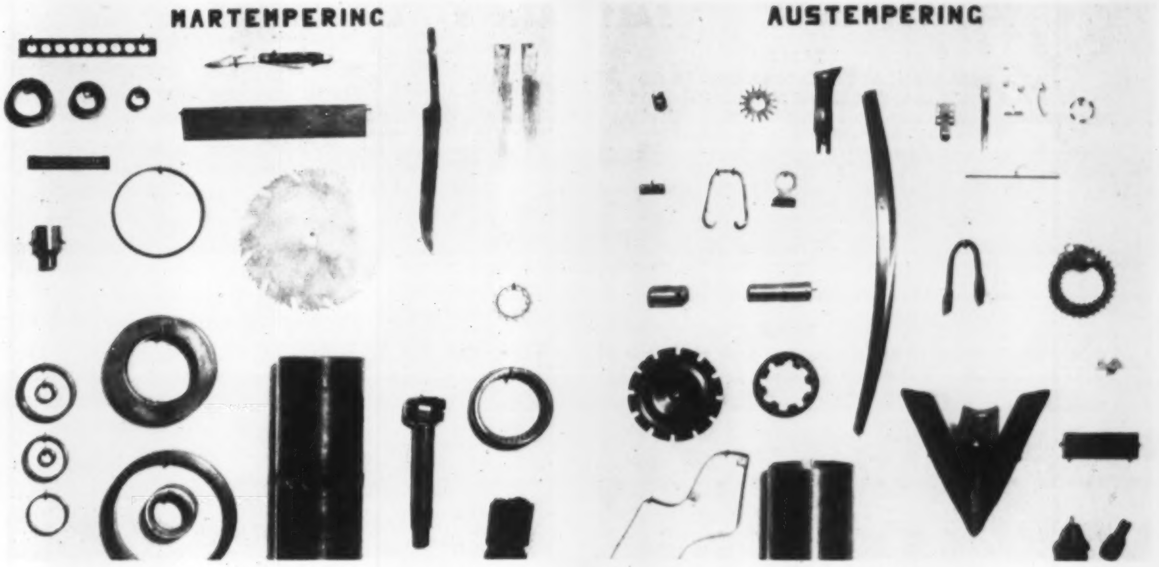
The electrodes are in a recessed area of the bath and by proper disposition are made to circulate the salt by electromagnetic forces. This field (Maxwell's law) causes particles of salt between the electrodes to move downward at a considerable velocity. In effect, a powerful salt pump is at work which gives uniform temperature throughout the bath and eliminates danger of local overheating of the salt.

Let's take a look at some of the properties of the salt bath that make it a versatile performer on the modern heat treating team.

Liquid Medium—First of all, we are dealing with a liquid, and one which has a specific gravity well in excess of water—from 2 to 3 times as much. From practical standpoint, metals likely to be encountered are heavier than the salt; therefore, they will sink into the salt.

This is true provided the shape of the piece permits. This brings up one of the limitations of salt baths. Shape of the work should be such that it will sink by gravity below the surface and also such that no salt will be trapped when it is withdrawn.

This property also means that the weight of the piece submerged in liquid salt is less than in air. Actually, it is 25 to 35 per cent lighter. This is a distinct ad-



Typical parts treated in salt bath furnace at Ajax Electric Co. laboratories

vantage: It tends to reduce distortion.

Protected—Chalk up a second valuable property: Metal immersed in molten salt is protected from contact with the air, and surface oxidation is prevented. As a result, as work leaves the bath and up to the moment it goes into the quench, it is practically as clean as when parts were loaded in the furnace. This surface protection applies not only to oxidation and scale but to decarburization as well.

A third important factor in heating metal in salt lies in the manner in which it is heated. Since all surfaces are contacted simultaneously, the rate of heating is independent of the position of the work in the furnace. There is no shielding from a radiating heat source.

Fast Heating—Another point: All heat transfer in the salt bath is by conduction at the surface. Heat transfer of this type is faster than by radiation, with the furnace held at a constant temperature.

Actually, time required to heat a piece of metal to fully equalized conditions in its center is less than one fourth of that required by other means. Figure 1 gives data on a test made on a 1-inch diameter bar, 3-inches in length, having a fine thermocouple imbedded in its center. Stabilized conditions in the center were reached at 1600° F in 210 seconds (less than 4 minutes).

Many Factors—It is well known that the rate of heating is affected by the furnace temperature—higher the temperature, shorter the time. Likewise, it is affected by the character of the piece being heated. Steel, in particular, having an endothermic transformation at its critical temperature, will heat more slowly in the range of 1400 to 1500° F.

Composition of the salt, because of its melting point, is a factor in heating rate. For instance, at 1200° F, time for heating is greater because no salt having a sufficiently low melting point is available. This is also evident at 2000° F (Table I).

Keep in mind that the heating rate data in Table I represent ideal conditions. In practice, some factor of safety must be used. This is particularly true in heat treating applications where time at temperature for metallurgical reasons is required.

Distortion Minimized—Now we come to a characteristic which is more responsible for the widespread acceptance of the salt bath method than any other—possibly more than all others combined. It is: The good control of distortion secured by proper techniques.

Built-in Preheat—First of these reasons is the automatic preheat which is inherent in heating in salt. As soon as parts are placed in the salt bath furnace, a layer of frozen salt is immediately formed on all surfaces, which tends to insulate the piece until it is melted off. Thickness of this layer varies with the section of the piece, melting point of the salt and operating temperature.

This frozen salt formation is easy to observe. Simply lower a part in the molten salt, leave it for a short period of time and then withdraw it from the furnace. This method was used in the Ajax Laboratories to secure the data in Table II giving salt thickness on steel bars as a function of the operating temperature of the furnace, using a salt with a melting point of 1230° F.

Rule—Table II suggests that operating temperature should seldom be less than 150° F above the melting point of the salt. This automatic preheat greatly minimizes thermal shock on the work. The data also points to a decreased effectiveness of two-step heating when salt bath furnaces are used. While there are a number of installations where a preheat and a high heat furnace are used, there is little conclusive evidence that a preheat furnace gives better performance in controlling dis-

TABLE I

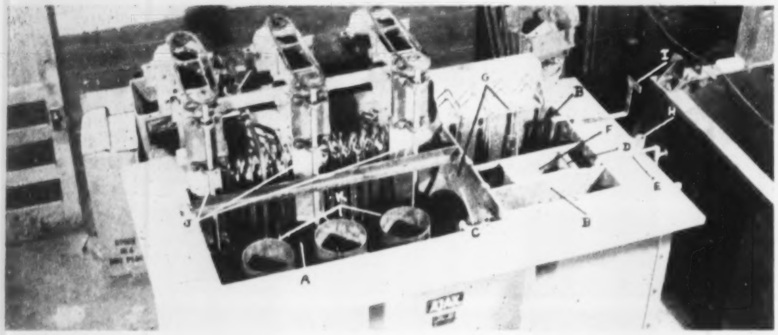
TIME TO HEAT TO SATURATION IN CENTER OF 1 INCH DIA. BAR, 3 INCHES LONG. #1042 STEEL

Temperature ° F.	Salt Type	Time Required	
1000° F	Nitrate salt	255 sec.	4¼ min.
1200	Triple chloride salt	392 sec.	6½ min.
1400	Triple chloride salt	314 sec.	5¼ min.
1600	Triple chloride salt	210 sec.	3½ min.
1800	Double chloride salt	192 sec.	3 min.
2000	Barium chloride	210 sec.	3½ min.
2300	Barium chloride	155 sec.	2½ min.

TABLE II

COCOON THICKNESS of salt on steel bars vs. time in heat treating bath. MIXED SODIUM — Potassium Chloride Salt — Melting Point — 1230° F

Diameter	Temperature ° F	Max. Thickness of Salt	Time to reach max. Thickness
1—inch	1300	0.152"	4 min.
	1400	0.080"	¾ min.
	1500	0.041"	¼ min.
	1600	0.026"	1/5 min.
2—inches	1300	0.214"	6 min.
	1400	0.078"	1½ min.
	1500	0.051"	¾ min.
	1600	0.028"	35 sec.
3—inches	1300	0.238"	11 min.
	1400	0.084"	2½ min.
	1500	0.052"	1½ min.
	1600	0.035"	¾ min.
4—inches	1300	0.300"	13 min.
	1400	0.101"	3 min.
	1500	0.057"	1¾ min.
	1600	0.032"	1 min.



Isothermal Quench Furnace—Two Chamber Type

A—Quench chamber
B—Salt separating chamber
C—Air lift pump
D—Filter basket
E—Entry to air bubble
F—Air lift pump
G—Return spout
H—Davit mount
I—Partlow mount
J—Propeller pumps
K—Quench headers

tortion. This, however, does not apply to high speed steel where a double critical at widely separated temperatures is involved.

More Reasons—The second factor conducive to distortion control is the uniformity of temperature in a salt bath furnace. Plus or minus 5° F is easily secured and consistently maintained in a properly designed furnace.

Another factor: The buoyancy effect previously mentioned. The weight reduction factor achieved is especially valuable in carburizing furnaces where long time cycles at elevated temperatures are required.

The open top furnace design also helps in distortion control. It permits individual fixturing of the work, if desired. This permits easy transfer to the quench and to subsequent operations.

Cools Too — Agitated molten salt has high cooling power. This characteristic is important to salt bath applications in today's modern treatments of austempering, martempering and cyclic annealing.

These methods are based on rapid cooling of the work to a selected temperature by quenching in hot salt. Effectiveness depends on one of the properties of molten salt not widely recognized until fairly recently—its cooling power at temperatures above 350° F.

Pay-Off — Time-temperature-transformation data have been developed for many of the standard steels and are being widely applied to commercial practices involving quenching at elevated temperatures. High specific heat and high fluidity of properly selected salt mixtures, as well as the almost complete absence of vapor phase when hot work is immersed in the molten bath are reasons for the wide use of salts as the quenching medium.

The effect of motion of the cooling medium by the work piece is even more pronounced with salt than with other quenching fluids, such as water or oil. Curves in Figure 2 show the great improvement in quenching power secured by directed agitation.

Reduced distortion and elimination of quench cracks are advantages of salt quenching. This points up their usefulness in processing finished machined or intricately shaped objects that must be held to close dimensional tolerances.

A modified austempering treatment used by one major auto producer gives cylinder liners with an average out-of-round condition below 0.005-inch on diameters of 3½ to 5 inches and with a maximum seldom above 0.010-inch. Result: Finished grinding can be eliminated; only a honing operation is used.

Basis — In austempering, the transformation of austenite is controlled to give bainite, a product intermediate between martensite and pearlite, which has high strength and good ductility. Alloys with a carbon content around the eutectoid value, after austenitizing, are quenched in a molten salt bath maintained at 500 to 800° F. Work is held in the quench bath until transformation is complete.

Martempering gives full hardness, with minimum residual quenching strains (which often result in cracking or distortion). Procedure: Steel is austenitized, quenched into a molten salt bath

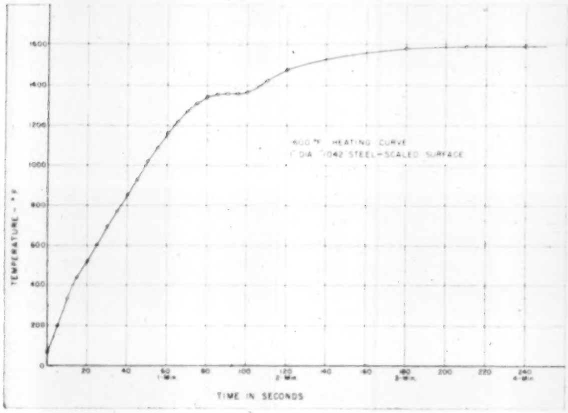


Fig. 1

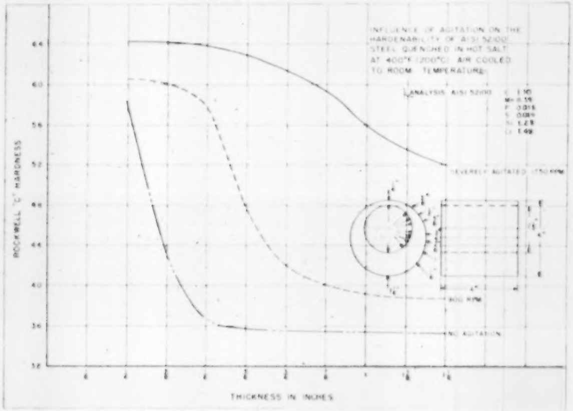


Fig. 2

at a temperature just above martensite transformation zone (400-600° F), held for a sufficient time to equalize temperature throughout the section, air cooled to room temperature, then tempered in conventional manner.

Changed — A modification of these procedures uses direct transfer of work from quench to tempering bath. Steel parts are austenitized in regular manner and quenched to a relatively low temperature (500 to 700° F). After holding in quench bath long enough to give a partial transformation, parts are transferred to tempering bath maintained at a temperature that will give desired hardness.

Generally the structure obtained is tempered martensite and bainite. It takes advantage of low temperature quenching for increased rate of cooling, yet the heat treated parts retain all of the characteristics of a bainitic structure. In common with all salt bath quenching, outstanding merit is less distortion of work.

Isothermal treatment of carburized work combines carburizing with martempering or austempering. This is one of the most promising cost cutting angles in modern heat treating. Work is held in a liquid carburizing bath to give required case, then transferred to neutral salt bath maintained just above the upper critical temperature of the case, followed directly by an isothermal quench. Toughness is added to the core and a uniform hard case is produced. Distortion and warpage are kept to a minimum.

Where Used — Austempering is used on relatively light sections, one fourth inch or less, where hardness requirements fall between 35 to 50 Rc and where toughness, or ability to bend without breaking after hardening, is required.

Parts such as shoe shanks, typewriter parts, sewing machine parts, automotive bumpers, springs, clutch plates and other automotive parts, wrenches, pliers, etc. are commonly austempered. Steel is generally carbon steel type SAE 1000 series, although alloys are occasionally used.

Heavy Sections—In martempering, on the other hand, alloy steel or carburized steel is the rule; heavy sections can be treated successfully. Ball bearing races are a popular application. SAE-52100 is generally used and bearings of 1¼-inch section and more are being martempered commercially today. Solid armor piercing shots of 3½-inch diameter and alloy steel castings nearly 6 inches thick are typical martempered items.

Many types of tools, gages, accurately finished parts, where high stress or high hardness requirements must be met are martempered. Outstanding advantages: Control of distortion. Final grinding of heat treated parts is an expensive operation and the saving in even a moderate reduction of the finished grind is significant.

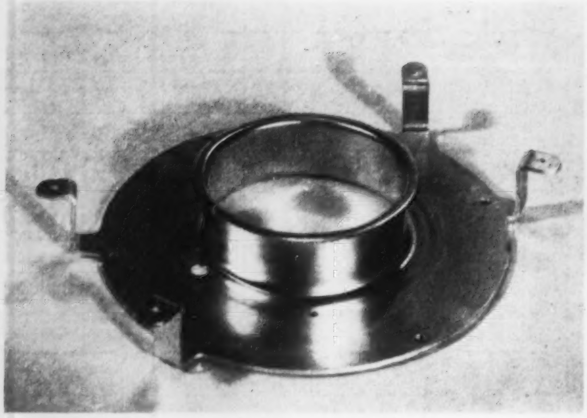
Requirement—To give optimum physical properties offered by isothermal treatment the quench salt, while maintained at a constant temperature, must cool the work at or above the critical rate.

In modern engineered installations, the exterior of the salt bath is surrounded by an air chamber in which a controllable volume of air is caused to flow. A temperature rise of 5° F above the control setting will actuate this air cooling system. The heating system prevents temperature drop below the control point. This control maintains salt bath temperature within 5° F (plus or minus) of a preset quenching point.

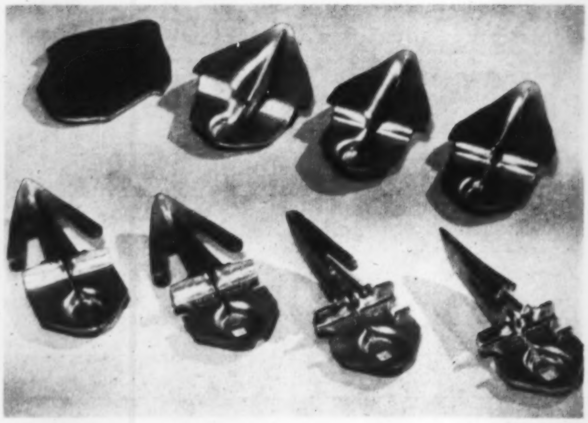
Treat Salts—Another major requirement exists in the quench furnace. If the work is heated in salt a certain amount of high temperature salt will be carried from the heating furnace into the quench furnace. The high temperature salt which is generally a mixture of sodium and potassium chlorides is only partially soluble in the quench salt which is normally a mixture of potassium nitrate, sodium nitrate and sodium nitrite.

The higher the temperature, the greater the amount of chlorides that are held in solution becomes. Here's the important point, however: An excess of chlorides over the amount held in solution drastically decreases the quenching power of the quench salt.

This means that a well designed furnace must have a built-in automatic salt purifying system. It's done this way: The furnace is built with two separate chambers. One is the quenching chamber in which the pumps are located. The other is the separating chamber which is operated at a slightly lower temperature, generally, 50 to 100° F less. This causes the chlorides to precipitate out of solution. They are filtered out and the cleaned salts returned to the quenching section.



Welder rheostat panel formerly was 14-part assembly



Mowing machine guard offered saving of 20 per cent

Stampings Offer Way To Cut Corners . . .

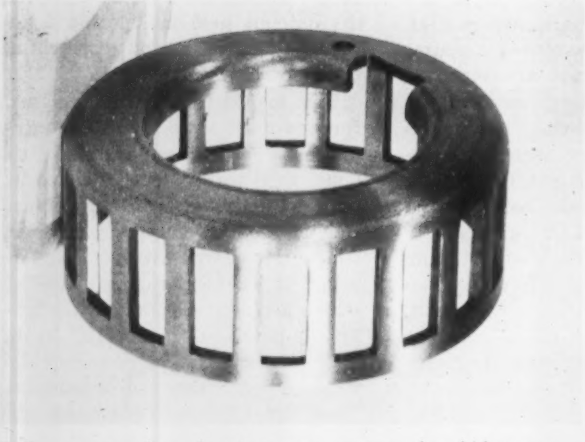
Fourteen-part assembly that required welding, machining and assembling can be incorporated into a single stamping. This is example of what stampers are doing today

FOURTEEN parts went into the assembly for the welder rheostat panel: A disc to which a heavy pipe section was welded in the center (outside of the pipe was turned to make a ledge), four lugs and eight bolts and lock washers.

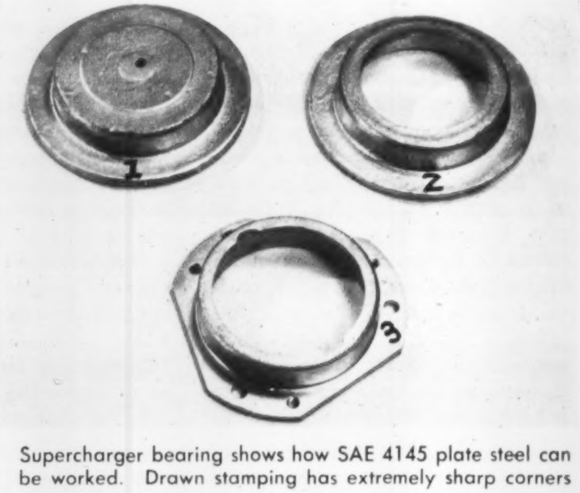
"Can this be stamped?" was the question.

The answer was a single part (photo above) that equalled the performance of the 14-part assembly at a substantial saving in cost. Turning to make a ledge on the pipe was eliminated by flaring the open end of the tubular portion of the stamping. Lugs, bolts and lock washers were omitted by making the four legs an integral part of the stamping—and it took no more raw material to do it.

Trend—Now that the pendulum of competition is on the upswing again, management is on the prowl for bargains like the simplified rheostat panel. Those with conversion on their minds are taking a long look at castings, forgings and stampings. One of the stamping men they are seeing is James M. Leake, president, Leake Engineering Co., Monroe, Mich. This group supplements production facilities of Leake Stamping Co. Engineering services include product and die design, research and devel-

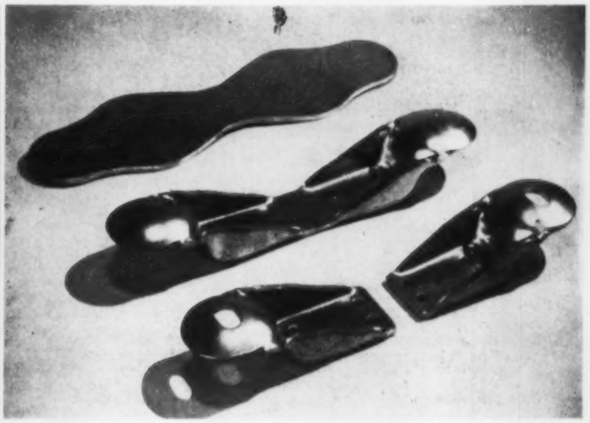


Roller cage—after drawing cup, rectangular holes are pierced, hole cut in bottom of cup and flanged inward



Supercharger bearing shows how SAE 4145 plate steel can be worked. Drawn stamping has extremely sharp corners

Half track guide was made in three operations from SAE 4140 chrome-moly bars. Machining was eliminated



Lamp bracket is stamped from ¼ inch steel in three operations. Machining and drilling were not required

opment, building and trying out dies.

Balance Sheet — When shopping for stampings, of course, there are several points, for and against, to consider. Among them:

In general, stampings offer low cost per piece in mass quantities. One of the big reasons for this is that they leave the press as a finished or nearly finished piece, bypassing such operations as surfacing, machining and drilling.

Some of the points to consider on the other side of the ledger: As the number of stamping operations goes up, over-all cost may not offer an edge over other methods; therefore, simplicity of design is essential to secure top value.

The Record — Of course, the stampers are out to beat the general rules any day they can. The complex mowing machine guard (photo, p. 112) was stamped from 3/16-inch, low-carbon steel in eight operations at Leake. Turned out at the rate of nearly 1000 an hour, they brought about a 20 per cent saving. End part, which did not require machining, was made for less than a quarter.

Or take the case of the half track guide. Made by another method from round bar stock, it took six press operations, two separate heats and expensive machining operations.

To do the job, Leake developed a special rolled section of SAE 4140 chrome-moly bars—3/16 inch thick at the edges and 5/16 inch at the middle. Three operations (forming and sizing) were made progressively in one press with only one heating. A part was completed with each stroke of the press.

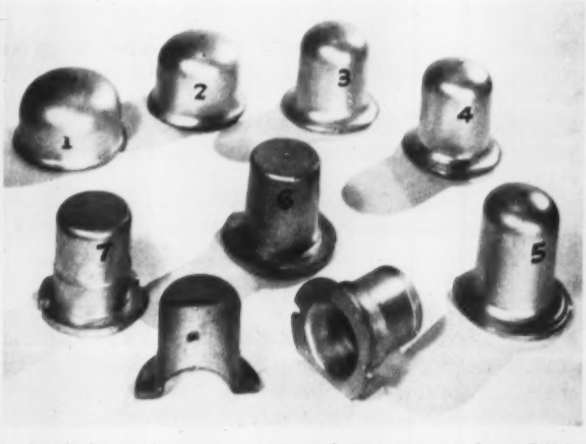
"On 4 million of these parts we were able to save the government $1.5 million," says Mr. Leake.

Another interesting conversion made by the company was the stamping of a one-piece, torque converter roller cage that formerly required a 22-part assembly, including 20 hardened and ground pins with soft shouldered ends. They had to be riveted at both ends in assembly.

"This stamping is cheaper and functions perfectly," says Leake. "Saving involved more than justified the extra precautions needed to get desired accuracy."

A second article on forming (deep drawing) is scheduled to appear in an early issue.

Leake specializes in stamped rocker arms for engines. The bushing used is made of steel with bronze lining



Bomb fuse adapter was stamped in one piece from 5/16-inch steel. Sharp corners required use of one anneal

HOW TO CLASSIFY Copper Base Alloys

Most copper-base compositions for castings are mixed brass and bronze. Usually in the alpha range, alloys often contain lead and other minor ingredients

Part 3

MOST copper base compositions for castings are mixed brass and bronze—usually in the alpha range of composition—with various admixtures of lead and minor ingredients.

Others, notably manganese bronze, are outside of the alpha range; and some, for instance, aluminum bronze, are special bronzes.

Gun metal for cannon before the age of steel ordnance contained about 10 per cent tin. The modern alloys of this type, called admiralty gun metal, government bronzes and other names, always contain some zinc; it de-oxidizes and improves the structure of the alloy—bronze alloys in the table are of this character.

One interesting exception to the general practice of keeping tin within the range of tough or even ductile compositions is bell metal. The special quality of sonority predominates and requires a hard alloy, containing about 20 per cent tin, often with additions of lead and zinc. Inclination to brittleness is attested by the Liberty Bell. Another exception is speculum metal, containing 30 per cent or more tin; it is useful for making metal reflectors in scientific instruments, although more modern alloys, such as Stellite, are available for such purposes.

Historical—It is easy to imagine that the high-tin bronzes must have been important in the age before competitive iron-carbon alloys. There is evidence that ancient metalworkers knew how to soften this material by quick cooling, or harden it by slow cooling, and applied this knowledge in making weapons.

This behavior, the opposite of that observed in steel, depends upon the fact that beyond the limit of alpha solutions (at about 16 per

This is the last of three articles on the subject. First dealt with commonly-used, copper-base alloys; second with wide range of available properties.

cent tin) there is a beta solid solution: it is normally existent at an elevated temperature and is softer and more plastic than the delta solution into which it transforms on slow cooling. Quick cooling prevents this transformation and furnishes a relatively soft alloy, while slow cooling promotes hardness.

Standardization—As with the wrought alloys, those used over a period of years for making castings have been extremely numerous; but in the last decade or so, efforts by American Society for Testing Materials, American Foundrymen's Association and other professional groups have resulted in considerable worth-while simplification and standardization.

Alloys chiefly recognized and used today are listed in the table based on American Society for Testing Materials Specification B30-49. As may be seen from the nominal compositions, the first six groups form a related series of copper, tin, lead and zinc alloys.

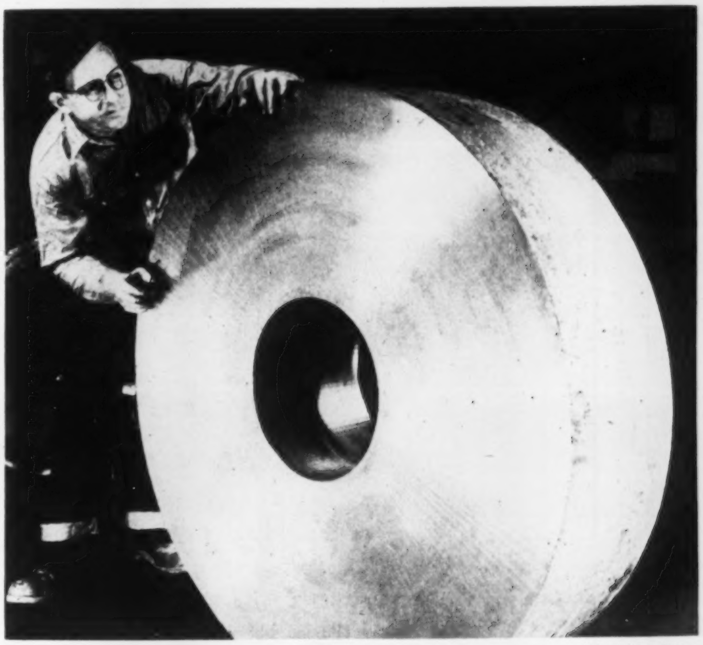
Generally speaking, cost will go up with increasing copper and, especially so, with increasing tin content. Strength and hardness vary more or less directly with tin content but inversely with copper content. All are readily machinable, because of the lead present; but that element also has an important role in bearings, where it promotes "wearing-in" and minimizes seizing and galling when lubrication is inadequate.

The two varieties of manganese bronze are relatively low-cost, high-strength casting alloys; aluminum bronzes as a group show high-strengths together with good fatigue and corrosion resistance. The nickel brasses and nickel bronzes are used mainly because of their white color.

Die Casting—There has been considerable development in the application of die casting to brass alloys; and since the introduction of alloy steel (better able to withstand the tendencies to copper-zinc mixtures to warp and check the die surfaces in a short time) fair connages are consumed in this manner.

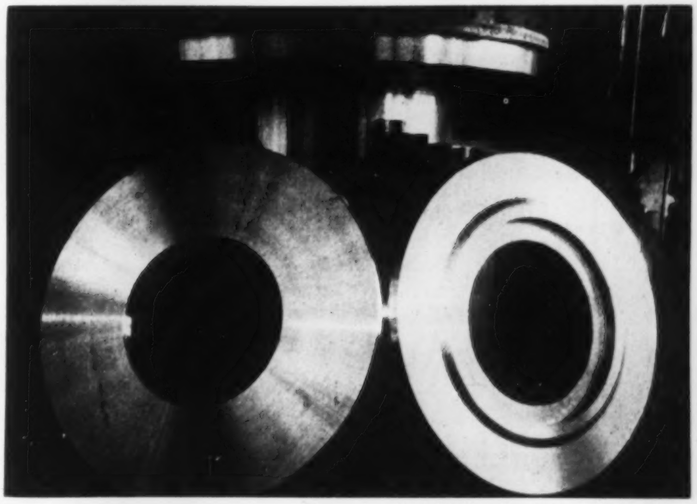
The lowest melting commercial brasses, which contain about 60 per cent copper, with small additions of lead and tin and a trace of aluminum (to clear the surface of the molten metal), are best suited to the process; but high-silicon bronzes are preferred where strength beyond the 50,000 to 60,000 psi of Muntz-metal-type brasses is required.

Age-Hardening Alloys—In copper alloys, the process of age-



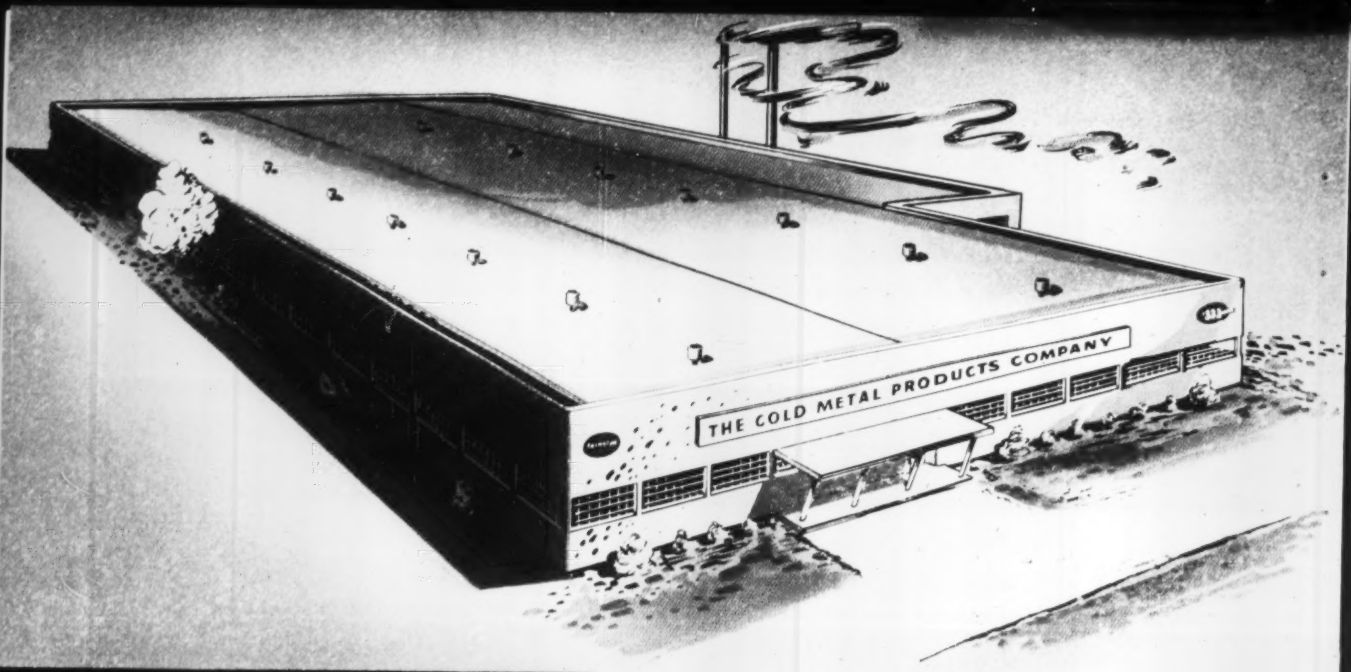
Ampco Metal Inc.

Bore and one face of this centrifugally-cast flywheel have been rough machined. Alloy contains 10.5 per cent Al, 3.5 Fe. Balance is copper



Brush Beryllium Co. Casting by Falcon Bronze

These are beryllium-copper welding wheels or dies. From 0.35 to 0.50 beryllium gave them right electrical conductivity, hardness, strength


THE COLD METAL PRODUCTS COMPANY

New CMP INDIANAPOLIS PLANT

This new additional plant of The Cold Metal Products Co. completes another step in the CMP expansion program. It's a special plant because it is technically engineered and equipped for the specialized production of the particular types of cold rolled strip and spring steel most needed by CMP customers in the mid-west area easily served from the Indianapolis location.

CONSTRUCTION

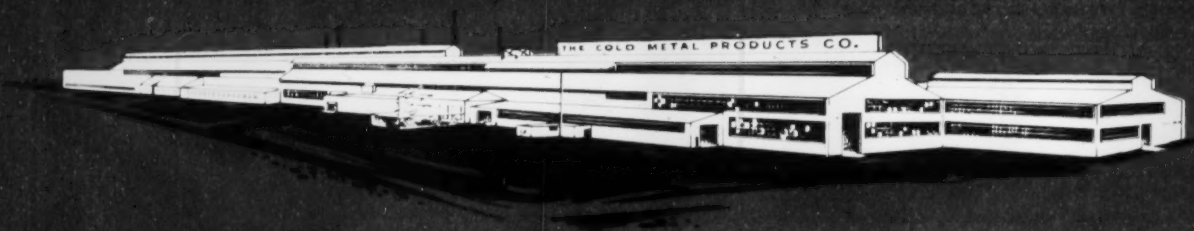
Constructed along lines of today's clean simplicity **of structural design,** it provides for the most **efficient flow of material** in process to net the lowest **manufacturing** cost practical for the special **tolerances, structures** and finishes characteristic of CMP **strip and spring steel** products.

FACILITIES

Included are CMP Type designed and built 4 High cold rolling mills, annealing furnaces, slitters, pickle line and auxiliary equipment necessary to produce the high standard of quality generally identified with CMP strip and spring steel products.

LOCATION

On a 32 acre site at 2301 South Holt Road in suburban Indianapolis, CMP is the first company to recognize and provide for the steadily growing needs of the area as an important consumer of specialized flat rolled steel products.


THE COLD METAL PRODUCTS CO.

YOUNGSTOWN PLANT AND GENERAL OFFICE

A COMPLETELY *NEW* PLANT . . .

**FOR ADDITIONAL
CMP PRECISION
COLD ROLLED STRIP STEEL
PRODUCTION**

LOW CARBON
SPRING STEEL
STAINLESS
ALLOY
ELECTRO ZINC COATED

With the additional Indianapolis facilities now in operation and providing an increased tonnage of CMP strip all customers will benefit. Since more product will be produced more customers can be served and improved deliveries in all areas will result.

The fact that so many fabricators have turned to CMP for the cost saving and product improving advantages of "special spec" cold rolled strip and spring steel is forceful testimony to the importance of spending more time in checking the values CMP products can offer you.

THINSTEEL

STILL PIONEERING, STILL IMPROVING COLD ROLL STRIP AND SPRING STEEL PROCESSING FOR IMPORTANT FABRICATION AND END PRODUCT ADVANTAGES

Over twenty-five years ago CMP introduced a new rolling mill principle which has since been generally adopted throughout the world by the flat rolled metal industry. Today's strip and sheet steel and other metals are the product of that revolutionary development. Since then, a continuing research and development program has yielded other "firsts."

Users of CMP cold rolled strip steel products find that in many applications CMP products provide important fabrication and processing advantages which have the effect of lowering end product costs.

To CMP plants in Youngstown, Ohio; Kenilworth, New Jersey and Los Angeles, California, the Indianapolis plant is a welcome addition. We proudly offer its product and services to all who have interest in or need for the best in cold rolled strip and spring steel products.

PRECISION COLD ROLLED
C M P
STRIP STEEL

the Cold Metal Products co.
YOUNGSTOWN 1, OHIO
New York Chicago Indianapolis Detroit St. Louis Los Angeles Cleveland San Francisco

LOW CARBON, HIGH CARBON (Annealed or Tempered) STAINLESS AND ALLOY GRADES, ELECTRO ZINC COATED ARE AVAILABLE FROM:
THE COLD METAL PRODUCTS CO. of CALIFORNIA, 6600 McKinley Avenue, Los Angeles
Phone: PLeasant 3-1291
THE KENILWORTH STEEL CO., 750 Boulevard, Kenilworth, New Jersey
Phones: N. Y., COrtlandt 7-2427; N. J., UNionville 2-6900

COPPER-BASE ALLOYS FOR CASTINGS*

Classification	Alloy Number	Commercial Designation	Nominal Composition, Pct. Cu	Sn	Pb	Zn	Ni	Fe	Al	Mn
Tin bronze	1A	88-10-0-2 or G bronze	88.0	10.0	...	2.0	...	...	...	..
	1B	88-8-0-4 or modified G bronze	88.0	8.0	...	4.0	...	...	...	..
Leaded tin bronze	2A	Steam or valve bronze (Navy M)	88.0	6.0	1.5	4.5	...	...	...	..
	2B	87-8-1-4 (Navy P-c)	87.0	8.5	0.5	4.0	...	...	...	..
High-leaded tin bronze	3A	80-10-10	80.0	10.0	10.0	...	...	...	...	..
	3B	83-7-7-3	83.0	7.0	7.0	3.0	...	...	...	..
	3C	85-5-9-1	85.0	5.0	9.0	1.0	...	...	...	..
	3D	78-7-15	78.0	7.0	15.0	...	...	...	...	..
	3E	70-5-25	72.0	5.0	23.0	...	...	...	...	..
Leaded red brass	4A	85-5-5-5 or No. 1 composition	85.0	5.0	5.0	5.0	...	...	...	..
	4B	Commercial red brass, 83-4-6-7	83.0	4.0	6.0	7.0	...	...	...	..
Leaded semi-red brass	5A	Valve composition, 81-3-7-9	81.0	3.0	7.0	9.0	...	...	...	..
	5B	Semi-red brass, 76-3-6-15	76.0	3.0	6.0	15.0	...	...	...	..
Leaded yellow brass	6A	High-copper yellow brass	71.0	1.0	3.0	25.0	...	...	...	..
	6B	Commercial No. 1 yellow brass	67.0	1.0	2.0	30.0	...	...	...	..
	6C	60-40 yellow (naval) brass	61.0	1.0	1.0	36.7	...	...	0.3	..
Leaded high-strength yellow brass (leaded manganese bronze)	7A	Leaded manganese bronze	59.0	0.75	0.75	37.0	...	1.25	0.75	0.5
High-strength yellow brass (manganese bronze)	8A	No. 1 manganese bronze	58.0	...	...	38.5	...	1.25	1.25	1.0
	8B 8C	High-strength manganese Bronze†								
Aluminum bronze	9A	Grade A	88.0	...	...	...	...	3.0	9.0	..
	9B	Grade B	89.0	...	...	...	...	1.0	10.0	..
	9C	Grade C	85.0	...	...	...	...	4.0	11.0	..
	9D	Grade D	81.0	...	...	...	4.0	4.0	11.0	..
Leaded nickel brass (leaded nickel silver)	10A	12 pct leaded nickel silver	57.0	2.0	9.0	20.0	12.0	...	...	..
Leaded nickel bronze (leaded nickel silver)	11A	20 pct leaded nickel silver	64.0	4.0	4.0	8.0	20.0	...	...	..
	11B	25 pct leaded nickel silver	66.5	5.0	1.5	2.0	25.0	...	...	..

* From ASTM Specification B30-49.

† Several nominal compositions are available for alloy numbers 8B and 8C which meet the physical requirements for these alloys.

hardening has been exploited in a limited sense. Such possibilities are clearly indicated by the constitutional effect of nickel on the ordinary copper-tin bronzes. The alpha solution in bronze, containing several per cent of nickel, requires a considerable amount of tin for saturation at red heat; at room temperature it retains perhaps one third of this amount; this presents conditions for controlled precipitation of excess material by quenching and aging or some modified treatment.

The conveniently hardenable range includes alloys containing from 3 to 10 per cent nickel. For example, an alloy with 8 per cent tin and 7.5 per cent nickel, has a proportional limit of 50,000 psi and a breaking strength of 90,000 in the quenched (760° C) and tempered (315° C) alloy; original casting has corresponding values of 25,000 and 55,000 psi, proportional limit and breaking strength.

Beryllium Copper—In spite of extensive research on many copper-base alloy systems, relatively few of the age-hardening type have hit the market in wrought form. Of course, from the standpoint of hardening, the outstanding example is beryllium copper. Sometimes called beryllium bronze, it ordinarily contains about 2.25 per cent beryllium, which precipitates as a beta or gamma solution from the alpha solid solution. End result is hardening, and sometimes a fraction of a per cent of nickel, which prevents coarse grain growth.

Others—Two of the copper-base, age-hardenable alloys that at first gave considerable promise of industrial application are the copper-nickel-silicon and copper-nickel-aluminum alloys. However, neither has gained wide acceptance.

Copper-chromium alloys and copper-cadmium-zirconium alloys which are hardenable, have been in fairly steady demand over a period of years—especially for such uses as welding electrodes, where their combination of strength, hardness, toughness and electrical conductivity render them especially suitable.

In the last few years, hardenable alloys of copper-nickel-phosphorus, with or without tellurium, have increased considerably in importance. They are used for general structural purposes and, in particular, for certain types of connectors, where good mechanical properties, electrical conductivity and machinability are especially attractive.

Adapted in part from the chapter on copper in **MODERN USES OF NONFERROUS METALS** by Dr. D. K. Crampton, director of research and development, Chase Brass & Copper Co. Inc., Waterbury, Conn. Work was recently published by American Institute of Mining and Metallurgical Engineers, New York.

B&W Smoothset MORTAR
DRY
THE BABCOCK & WILCOX COMPANY
B&W
REFRACTORY BRICKS and MORTARS
100 LBS. NET WHEN PACKED

Now!

B&W SMOOTHSET

Available in Dry Form

Here's the mortar refractories masons asked for—and it's as easy to use with insulating firebrick as the popular wet B&W Smoothset because it has the same high water retention.

This property is important because the highly porous structure of insulating firebrick draws the moisture rapidly from the mortar, thus allowing too short a time for proper placing and setting of the brick before most mortars become unworkable.

Besides high water retention, the new dry B&W Smoothset can be stored indefinitely in a dry place without hardening—a big advantage on large jobs when refractories are installed over a long period of time.

In addition to helping you select the most economical refractories, your local B&W Refractories Engineer will be glad to help you select the best mortar for your installation. Next time you build or reline your furnace, get the benefit of his long experience.

BABCOCK & WILCOX

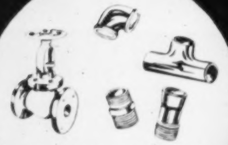
THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42ND ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

R480

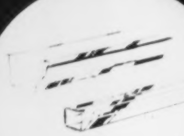
B&W REFRACTORIES PRODUCTS — B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick **B&W Refractory Castables, Plastics and Mortars** • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment... **Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel** Burning Equipment . . . Pressure Vessels . . . Alloy Castings

CARBON DRILL ROD

STAINLESS ITEMS—
Sheets, Plates, Bars,
Shapes, Pipe & Tubing



STAINLESS VALVES, AND FITTINGS



STAINLESS DOWNSPOUTS, GUTTERS AND ELBOWS

STAINLESS WELDING ROD

STAINLESS FASTENINGS

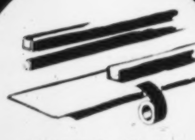
What's Your Line?

These items can help you take the guess-work out of your production

SPECIAL SHAPES—
Flame-Cut From Stainless
or Carbon Steel

STAINLESS FLATTENED EXPANDED METAL

STAINLESS RIGIDIZED METAL



COMPLETE STOCKS OF CARBON STEEL

For prompt service on any of these stainless items, write, wire or phone LAfayette 3-7210.

CHICAGO STEEL SERVICE COMPANY
Kildare Avenue at 45th Street, Chicago 32, Illinois
Telephone: LAfayette 3-7210

The House of Stainless

STEEL AT YOUR SERVICE STEEL

Researcher is determining ability of stainless alloys to maintain long-time strength at higher temperatures

Equipment was designed to test alloy steels with low thermal expansion, such as cone sections for TV tubes

Apparatus measures AC permeability of core materials at low inductions. Magnetic group at Allegheny uses it

Type 316 stainless steel was used in the construction of this cabinet for saltspray testing of materials

THERE IS NO LACK of Frontiers

IN DAY-TO-DAY experience, the phrase, business as usual, doesn't prove out to be a standstill state of affairs. Industry, armed with an ever growing technology, is continuously creating new opportunities, new frontiers to conquer.

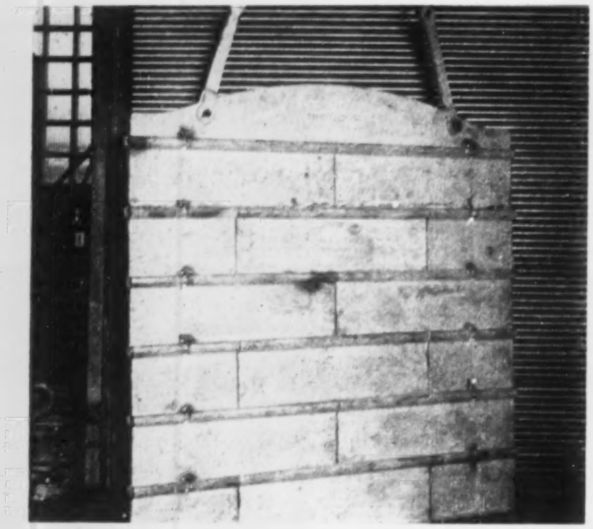
To single out a typical example of this working philosophy, E. J. Hanley, president of Allegheny Ludlum Steel Corp., outlines his company's plans for "new products to explore new markets" this way:

At the developmental level, they are working on superalloys for jet engines and precipitation hardening steel. Former research includes molybdenum and chromium-base alloys to permit operation up to a range of 1950 F. Latter is particularly aimed at valves for the chemical industry and the solution of design problems in the aircraft industry.

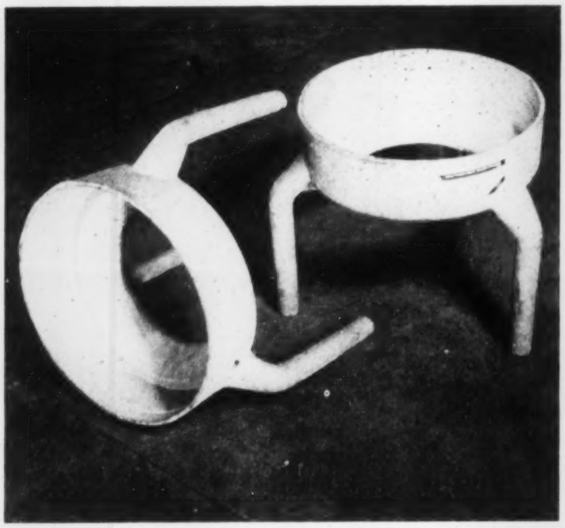
New products on the market include a valve steel alloy (for auto and aircraft engines) that combines corrosion resistance and higher strength at temperature.

Growthwise, the company is re-expanding its facilities for the production of fully-finished, grain-oriented silicon steel.

And on the promotional level, the company will push wider acceptance of stainless steel in building and construction, including its use for main structural members.



This sectional damper used in a steel mill heating furnace is made of Thermalloy 30 (HF alloy) by Electro-Alloys Div., American Brake Shoe Co., Elyria, O.



Bottom casting for the heat treating furnace is made of HF alloy 20 chromium and 10 nickel for Leeds & Northrup Co. by Empire Steel Castings Co., Reading, Pa.

Way To Save Nickel

A 20 per cent chromium 9 nickel alloy can substitute for 26 per cent chromium 12 nickel in the intermediate temperature range of 1200 to 1600° F

YOU CAN save about 25 per cent of the nickel in alloy castings for use in the intermediate temperature range.

That's the latest word from the Alloy Casting Institute based on research sponsored at Battelle Memorial Institute. Studies, just completed, are expected to stimulate more widespread use of a long-neglected alloy as a substitute for alloys containing more nickel.

Less Alloy—The substitute alloy, designated as the HF grade, contains about 20 per cent chromium and 9 per cent nickel. It can take the place of an alloy containing about 26 per cent chromium and 12 per cent nickel (HH grade) in the intermediate temperature range of 1200 to 1600° F. Mechanical properties of the modified alloy are comparable to those of higher nickel heat resisting alloys.

Trends to higher operating temperatures in many industries are pushing the low alloy materials now used for furnace construction to their limits of usefulness. At the same time increased heat treating of metal parts at intermediate temperatures creates an outlet for a lean nickel alloy in this service.

Although the HF alloy has been used to some extent in the past few years, release of extensive test data on this grade will increase its area of application where higher alloy grades now are being used.

Basic Data — Investigating a broad series of experimental alloys, A. M. Hall, Chief of Battelle's division of alloy development, and his group found that the most useful range is 19 to 23 per cent chromium, 9 to 12 nickel and 0.25 to 0.40 carbon. This composition now is designated HF alloy type.

Mechanical properties of the austenitic HF compositions in the 1200 to 1600° F range are comparable to those of the higher-nickel alloys. At 1400° F, the 100-hour rupture stress (indication of load carrying ability of the metal at high temperature) of a typical HF composition is about 14,000 psi. This is the same as the higher nickel (HH) grade.

Bonus Here—After service at high temperatures, the residual room temperature mechanical properties of an alloy are important. For example, some materials become embrittled making it difficult to handle them in maintenance or repair.

The HF grade (20 Cr, 9 Ni) as-cast has satisfactory ductility; average elongation value is about 30 per cent. After 24 hours' exposure at 1400° F, elongation is 17 per cent—still adequately ductile.

Comparative figures for the higher nickel HH grade are 20 per cent elongation as-cast, and 10 per cent after 24 hours at 1400° F. Here's the bonus: The HF grade not only conserves nickel, but actually gives a material of superior ductility for intermediate temperature service.

SCENE 63: "Extending Tap Life"

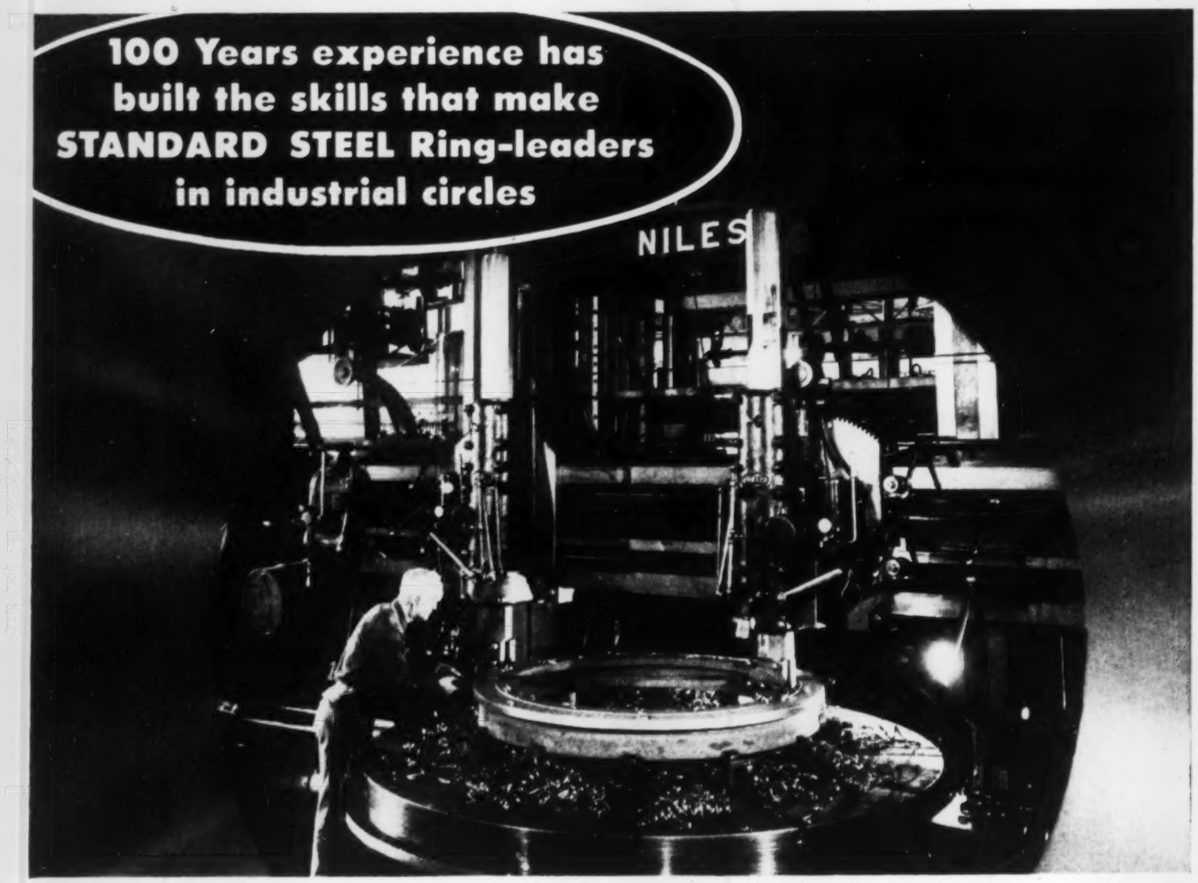
. . . an actual scene from the GTD-Greenfield sound film "Facts About Taps and Tapping"

VOICE: "While the material will determine the amount of rake or hook to use, very abrasive materials which wear taps rapidly call for something additional. By making taps used in Bakelite, zinc die castings, and similar materials slightly oversize in the threads, the tap life is extended without exceeding tapped hole tolerances."

GREENFIELD
TAP AND DIE CORPORATION
GREENFIELD, MASSACHUSETTS

This 26-minute full-color motion picture "Facts About Taps and Tapping" is now available for group showing through your local GTD-Greenfield distributor.

100 Years experience has built the skills that make STANDARD STEEL Ring-leaders in industrial circles



Photographed through one of the smallest forged rings made by Standard Steel, this 120-inch Niles vertical boring mill is machining a gun base mount stand ring which will have a finish O.D. of 69½ inches, which operator is checking.

Experience builds skill, and skilled manufacturing produces quality products. Standard Steel Works has had 100 years of experience to build the manufacturing skills that produce finest quality weldless rings and flanges.

Standard Steel's experience has developed to a high degree the skills that make possible accurate quality control of the analysis and physical properties of their steels . . . close control of heat treatment, rolling and other forming operations . . . precise machining to assure finishing of rings and flanges to exact specifications.

You can't ignore experience as a guide to quality, and Standard Steel's experience is hard to match . . . still another reason why you can always rely on Standard Steel for rings and flanges.

ONE OF SIX REASONS why you should call Standard Steel for forgings and castings.

1. Experience—produced by skilled workmen with 20 to 40 years experience.
2. Quality Steel—through production of own steel by acid process.
3. Uniformity—assured by precise control of forging and rolling operations.
4. Fast Service—a vital factor in the continuing growth of Standard Steel for over 150 years.
5. Testing—radiographic tests, tensile tests, hardness tests, ultrasonic probing of internal structure, etc.
6. Capacity—unsurpassed ability to produce forgings and castings of unusual sizes and shapes, such as weldless rings all the way up to 144" O.D.

For more information, write Dept. 8546

Standard Steel Works Division
BURNHAM, PENNSYLVANIA

BALDWIN-LIMA-HAMILTON
General Offices: Philadelphia 42, Pa. • Offices in Principal Cities

Inspection Rate Booster

SOLUTION to an old problem—achieving high inspection rates by using, not obsoleting, existing units—is reported by Magnaflux Corp. The company says it has developed a conveyorized auxiliary production unit that works for small to medium-size parts, in conjunction with any of its standard models.

The important principle is conveyorization. By adding an auxiliary production unit to a standard model, the old ratio of one operator to each inspector is improved. With addition of the new unit, one operator can supply either two or four inspectors and production of the standard model is doubled, in some cases quardrupled, according to the company.

Smooths Work Flow—Other advantages reported by the manufacturer are smoother work flow and, in process control, reduced waste process time through faster answers to process problems.

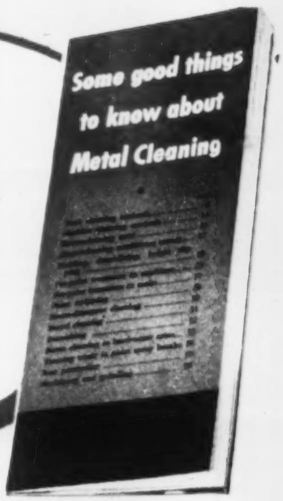
In operation, part is magnetized and placed on the conveyor. The auxiliary unit carries it through a bath application station to inspectors who remove unacceptable parts. Then, acceptable parts are carried through demagnetizing process to end of inspection cycle.

Alpha Tells on Poppy

Alpha poppy is the descriptive handle given by General Electric Co. to its new radiation detector. Resembling the common conception of a futuristic ray gun, the detector doesn't send rays; it catches them instead.

The device is designed to check work areas and clothing for alpha radiation sources. It will often be used with equipment that sends out warning pops when alpha contamination is detected. Hence, the name.

Muzzle of the pistol-like detector is passed close over suspected areas of contamination. Tissue-thin aluminum foil lets in alpha rays, keeps out normal light. Rays are caught by a zinc sulphide screen, which causes them to expand their energy and create light. The light is converted to electrical impulses, which are amplified to obtain an audible or visible signal.



WHICH
METAL-CLEANING JOBS
WOULD YOU LIKE
TO IMPROVE?

Listed below are some of the operations discussed in Oakite's 44-page handsomely illustrated booklet on Metal Cleaning. Please check the list. Then let us show you how Oakite methods can give you better production with greater economy.

Technical Service Representatives in
Principal Cities of U. S. and Canada

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

OAKITE PRODUCTS, INC.
34E Rector St., New York 6, N. Y.

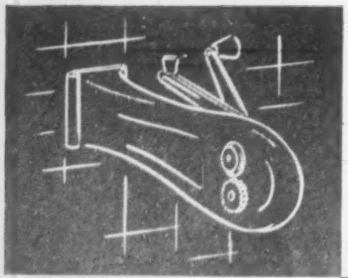
Tell me about Oakite methods and materials for the following jobs:

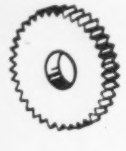
- ☐ Tank cleaning
- ☐ Machine cleaning
- ☐ Electrocleaning
- ☐ Pickling, deoxidizing
- ☐ Pre-paint treatment
- ☐ Zinc phosphate coating
- ☐ Paint stripping
- ☐ Steam-detergent cleaning
- ☐ Barrel cleaning
- ☐ Burnishing
- ☐ Rust prevention
- ☐ ALSO send me a FREE copy of your booklet *"Some good things to know about Metal Cleaning"*.

Name ______

Company ______

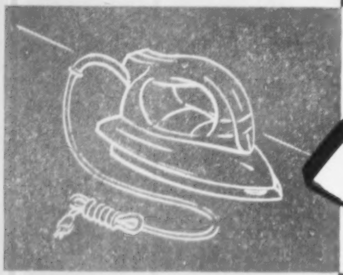
Address ______

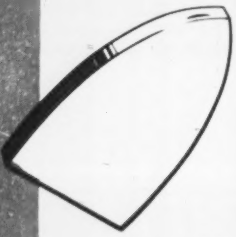




DETROIT BROACH TOOLS CAN OPENER WHEEL

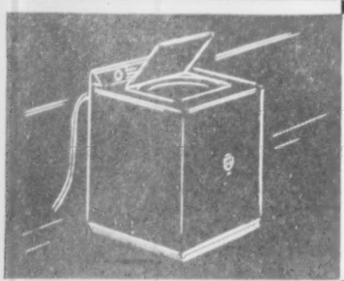
The serrations on the gripper wheel of can openers are produced with Detroit Broach tooling. While taking a big bite out of production costs, broaching produces sharp teeth with consistent form that requires no additional machining.

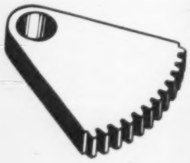




DETROIT BROACH TOOLS FLAT IRON SHOE

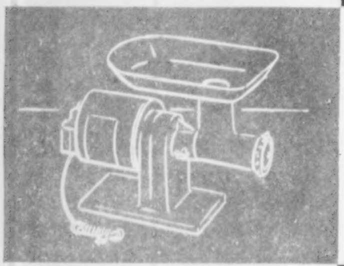
In one fast pass, Detroit Broach tooling machines the faces of these shoe castings sufficiently smooth and flat that only an additional buffing operation is required. On such castings of iron or aluminum, output is high and money is saved.

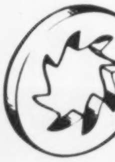




DETROIT BROACH TOOLS WASHER QUADRANT

Detroit Broach tooling produces twelve involute teeth in washer quadrant castings with a 7/32″ depth of cut, accuracy of the involute is easily held within .001″. In addition to accuracy, broaching is washing the spots off previous production figures.

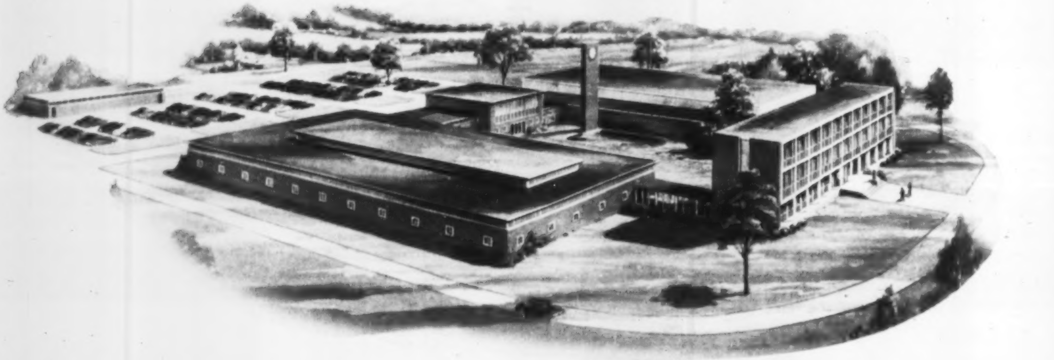




DETROIT BROACH TOOLS GRINDER BLADE

Producing the internal tooth form in meat grinder blades would be a slow task by any method other than broaching. But Detroit Broach tooling produces the entire form in one pass with a surface finish so smooth that no additional finishing is required.

This is a view of the new, ultra-modern Detroit Broach plant and offices located in Rochester, Michigan just outside Detroit. Designed by Sture Frolen, eminent Swedish architect, it embodies many important advancements that contribute to employee morale and manufacturing efficiency. Another example of the unusual facilities of Detroit Broach Company.



Broaching Pioneers

IN THE APPLIANCE INDUSTRY

Thanks to the ingenuity of America's appliance industry, today's housewife has been elevated from the status of hand laborer to that of a skilled technician. In every phase of her daily housework, mechanical and electrical tools lighten her work and shorten her working hours.

To bring these worksavers within the reach of the *average* housewife has called for the application of the most economical production techniques. And that is why the appliance industry has long relied upon Detroit Broach tooling to help them shave costs while maintaining a high level of quality. At the left are four examples.

in YOUR industry, too,

you will find countless examples of Detroit Broach tooling that is putting the squeeze on manufacturing costs. At the same time it consistently raises production output per man with automatic repetitive accuracy.

Part of the reason for the performance of Detroit Broach tooling is due to the fact that our entire efforts and facilities are keyed exclusively to this one machining technique. Another reason is our conviction that the conventional approach is not always the best approach . . . we point to some of broaching's great advancements as evidence.

Why not investigate the all-round economies that these facilities and this thinking can achieve in your plant. There is a Detroit Broach representative in your locality who can give you all the answers. Drop us a line and we'll have him call at your convenience.

Detroit Broach COMPANY

ROCHESTER, MICHIGAN

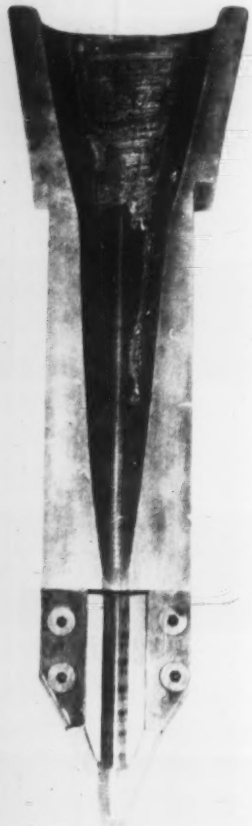
OFFICES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Titanium Carbide

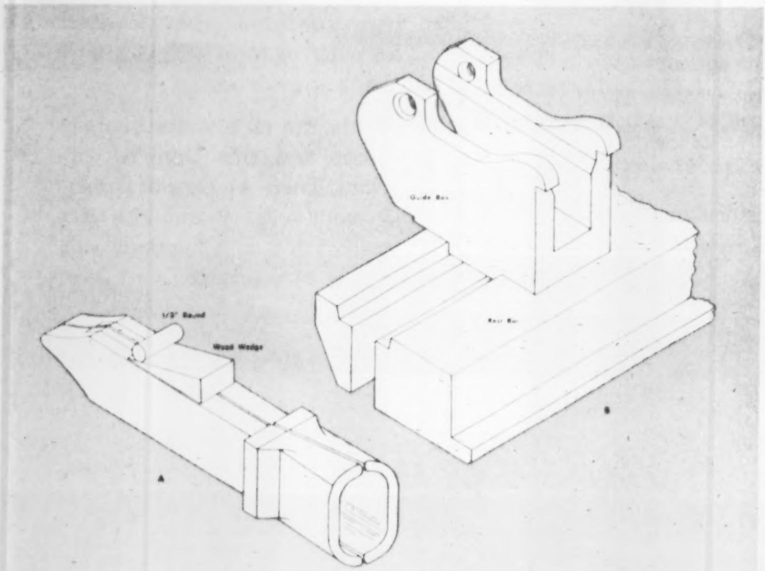
NEW ELIXIR OF LIFE FOR ROD MILL GUIDES

Users report mill yield up 2 per cent and net savings per ton up to $2.75 due to trimmed downtime. Wear life ratio is as high as 45 to 1

By S. ALLEN OVIATT
Development Engineer
and
PATRICK H. GRIBBIN
Field Engineer
Kennametal Inc.
Latrobe, Pa.

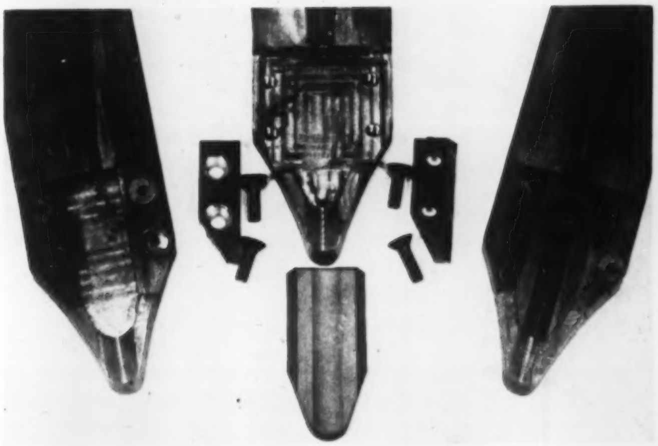


Standard brass guides can be modified to hold Kentanium inserts. Just as important to insure rod guiding accuracy is the accurately-machined insert holder and rest plates, below



ELIMINATION of production downtime occasioned by frequent rod mill guide changes, an 80 per cent reduction in scrap generation, in addition to maintenance of both extreme cross-sectional accuracy and uniformity of product surface finish, is today being experienced in mills of the country's largest rod producers by use of new titanium carbide mill guides for the rolling of AISI 1010, 1020 and various other grades of alloy wire rod.

Unusual properties of this new guide insert material, Kentanium (a member of the Kennametal family of sintered carbides), make it especially adaptable for handling red hot rod through today's high-speed mills at 5000-5200-fpm finishing speed as well as in lower-speed mills of 3200-3500-fpm finishing speed. Until the advent of Kentanium, mill operators advise they never encountered an insert material that proved satisfactory for the purpose, including the modern-day tungsten carbides, cast alloys and high-speed steel.



Closeup of a modified rod mill finishing guide shows (left to right) completed guide and holding side plates minus the carbide insert, breakdown of the complete assembly, and the completed rod mill guide

Really Wears—Kentanium guide inserts show a wear ratio as high as 45 to 1 over previously used materials. Characteristics of non-galling, resistance to both abrasion under heat and shock, lend the material to immediate application for hot wear surfaces. Its semi-lubricating action presents less tendency to drag or pickup, permitting mills to produce higher tonnages due to lessened downtime; both product finish and cross-sectional accuracy are vastly improved.

One of the vexing problems in rod mill operation solved by use of the inserts is that of tangles or cobbles which are quite often caused by poor guiding of the traveling rod into the rolls.

Mill Yield Upped 2%—While the exact dollar value of the savings produced by lessened downtime and improved product finish cannot be calculated from day to day, extended periods of testing and recording show that these factors contribute considerably to the mill's over-all yield. An eight-month report from the plant of a leading rod producer, shows considerable bettering of their mill yield—in many instances up to 2 per cent.

They also discovered a net savings in production costs of from $2.25 to $2.75 on each ton of rod produced per 8-hour shift, due to the increased production secured by eliminating much of the downtime previously required for changing short-lived mill guides.

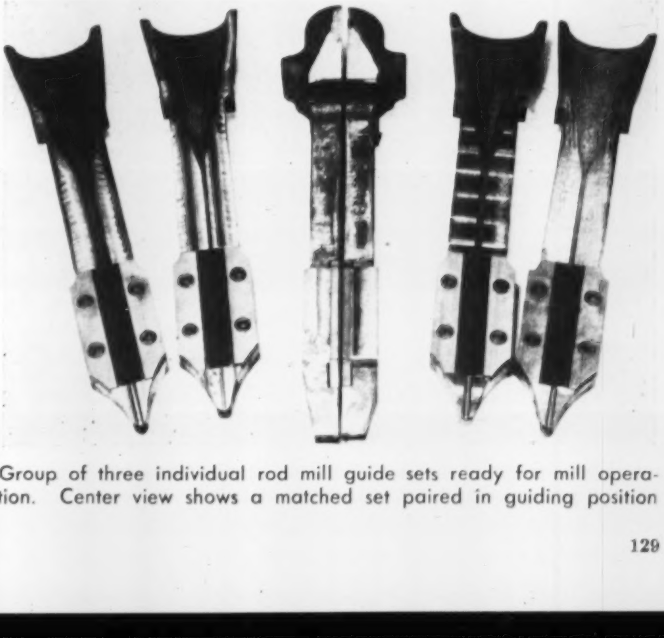
Wear-life ratio of the carbide (45 to 1) to conventional guiding materials makes its initially higher cost of installation a negligible factor. Less maintenance effort and the resultant per-worker gain in tonnage have more than paid the difference. Further, the better rod produced lowers cost of subsequent drawing operations due to its better shape, showing no galling or deformities. There are direct savings because of both decreased maintenance and wear on draw dies.

Better Control — Yesterday's practice of each mill shift freehand form-grinding its guides to its own specifications now goes "out the window." It will no longer be a floor problem to create guides by handforming, as this can now be transferred to the machine shop as a simplified yet controlled production operation.

To insure rod guiding accuracy, control must be extended to include an accurately machined holder and resting block. This indicates the need for the same accuracy and exactness to be used in finishing all surfaces of the insert holder, the "locking-in" box as well as the rest-plate to insure true alignment in guiding. It has been found wise to make up guides in sets so that regrinding can also be quickly handled to exact tolerances.

We might mention here that standardization with sintered tungsten carbide metal-working tools has produced similar outstanding plus values and production savings in the metal removal field.

Typical Case—Abrasiveness of the hot rod travelling from 40 to 60 miles per hour at temperatures of from 1600 to 1800° F readily caused excessive wear in both brass and alloy guides. As wear increases in the guide, enough movement can result to allow the rod to veer off to the side, missing the rolls entirely and causing a tangle or cobble. There is also the continual problem of conventional guides wearing too rapidly, which necessitates their change in from 3 to 10 hours of mill operation—



Group of three individual rod mill guide sets ready for mill operation. Center view shows a matched set paired in guiding position

10 hours being the maximum rather than the norm.

Changing four guides per mill stand would result in a minimum of eight minutes to a maximum of twenty-four minutes downtime per 8-hour shift. With the use of titanium carbide guide inserts, mill downtime is normally reduced up to 90 per cent—in addition to effecting savings by scrap reduction, increased production and a better end product in the coils.

Operating Conditions—As this material presents a wear surface that resists abrasion at high temperatures, it should never be set up with a "toe-in" angle. Such a condition tends to force inserts to work as a draw die, thus shortening their effective production life. Experience has shown that the guiding radii of two guide halves should be set up parallel to, and with a free fit on the master gage wire to be rolled. This type of setting is currently giving the longest wear life.

Otherwise, Kentanium rod mill guide inserts should be operated under normal mill conditions with an ample flow of coolant water. When proper education in the usage of this material is given to operating personnel at the time of installation, immediate production advantages are gained. Inserts are reground to size and finish in approximately 10 minutes per piece and, not requiring use of extensive diamond wheels, lend themselves to ease and economy of maintenance.

310 Hours—Practice of shimming-up guides in the box snugly, then removing one shim seems to provide the correct adjustment (approximately 0.010 inch) on mills where successful runs of 200 to 310 hours have been achieved before any regrinding was required. This results in the longest wear-life and gives true rod guiding alignment.

As a matter of interest, a set of titanium carbide guides which had been reground eight times, produced an average run of 200 hours per regrind for 1600 hours effective guide life. Scrap being reduced to 1/6 of its former quantity, along with the aforementioned savings and production benefits, constituted a considerable production economy.

Possibility of rolling smaller diameter rod or wire will be a reality with the use of these inserts. This in turn will reduce present cost of manufacturing rod sizes which today are being drawn.

Thread Insert Repair Kit

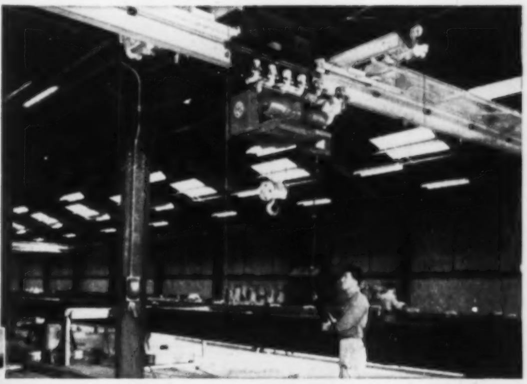
A repair kit, designed for use in maintenance departments of manufacturing firms, contains an assortment of 25 inserts each of four commonly-used sizes. All tools necessary for the wire insert method of thread repair are included in the kit manufactured by Heli-Coil Corp., Danbury, Conn.

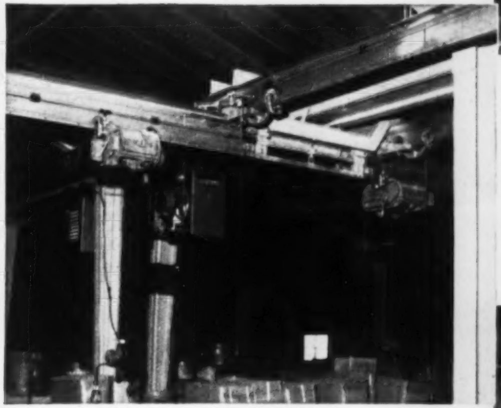
Recesses are milled into the wooden case to receive the inserts and the special tools. Case is fitted with a hinged cover which, when closed, prevents inserts and tools from being displaced, even if the kit is turned upside down. A direction sheet is glued to the inside of the cover, photographs illustrate the thread repair method and a chart indicates the position of tools and inserts in the kit.

Roll STANDARDS or SPECIALS
AUTOMATIC THREAD ROLLERS
1/8" to 2 1/2" lengths
HARTFORD Special
THE HARTFORD SPECIAL MACHINERY CO., HARTFORD 12, CONN.

for smooth operation at low maintenance cost use......AMERICAN MONORAIL CRANES

Three-ton hoist hook service extends from craneway to craneway by finger-tip controlled passage of carrier across crossover with cranes interlocked at each end.





One-ton hoist operated from crane bridge to crane bridge interlocked at crossover between craneways.

Three MonoRail cranes are interlocked to form passageway for transfer from receiving dock to steel storage area. Crane in foreground interlocks with spur track to each shear.

To handle variable loads over maximum areas, MonoRail Cranes offer smooth travel, easy movement, interlocking service between and beyond craneways, low initial cost and most important low maintenance cost. American MonoRail engineers are experienced in all phases of "up and over" handling. They are available for free consultation at your convenience.

Write for C-1 Bulletin

AMERICAN MONORAIL COMPANY

OVERHEAD HANDLING EQUIPMENT

13102 ATHENS AVENUE • CLEVELAND 7, OHIO

NO CAPITAL INVESTMENT
for your material handling costs
when you use
CLARK'S PAY-AS-YOU-GO LEASE PLAN

Without tying up a penny of working capital, put Clark material handling equipment to work for you. With Clark's pay-as-you-go plan, any of Clark's many models and types of handling equipment is available for your immediate use. With no down payment and at a low monthly cost, this lease plan enables you to:

1. Conserve working capital for other essential needs—such as additional inventory, plant expansion and non-leasable capital equipment
2. Pay-as-you-go rental is a totally deductible expense
3. Eliminate trade-in problems and get the benefit of newest equipment.

No outside financing is necessary—you deal directly with your local Clark dealer who will help you determine what equipment best fits your needs. Gas or electric fork trucks, Powrworker hand trucks, tractors and Clark-Ross carriers—all are available on a 3 or 5 year lease.

Let Clark equipment pay for itself as it cuts your handling costs. Call your local Clark dealer for a discussion of the details which will not obligate you in any way.

SEE THE YELLOW PAGES OF YOUR PHONE BOOK FOR THE NAME OF YOUR LOCAL CLARK DEALER

CLARK EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 26, Michigan

Electronic Punch Press

SCIENTISTS at General Electric Co.'s electronic laboratory at Syracuse, New York, have developed an automatic punch press with an electronic brain. Its techniques are being adapted to electronic equipment fabrication under a U. S. Signal Corps contract.

Directions are fed to the press by an electronic digital computer. The computer reads a perforated card containing information on size, number and location of the holes to be punched. The punch press automatically positions the material to be perforated and performs its punching operations within an accuracy of a few thousandths of an inch.

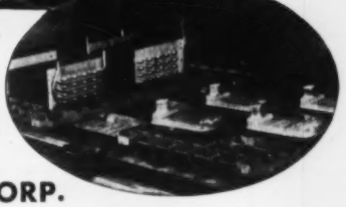
Press Is By-Product—The Signal Corps contract calls for development of a system of automatic machinery to assemble and test electronic circuit subassemblies for various military electronic equipment. The press is a forerunner to an assembly machine to be used in the automatic assembly system being developed for them. It was made automatic primarily as a proving ground for techniques and component elements to be embodied in the assembly machine.

The press will be removed from the laboratory in the near future and placed in a factory for further development and experimental use to determine if it is a practical means for increasing worker productivity in other areas.

DIGITAL COMPUTER
. . . reads from perforated card

ROLOCK
FABRICATED ALLOYS

Rolock "Serpentine" Trays carry Condenser Units on powered rollers thru furnace, for brazing at 2050°F



BRAZING TRAY life increased 140%
Maintenance *decreased* 100%

. . . at FEDDERS-QUIGAN CORP.

Rolock "Serpentine" furnace trays, built for this specific use, were furnished in two sizes . . . 24" x 30" (weight 22 lbs.) and 24" x 36" (26 lbs.). The maximum load carried by the larger tray is 80 lbs. . . . in brazing, an exceptionally good ratio of load to weight. Some trays are of type 330 stainless, others are of Incoloy.

Trays formerly used had a maximum life of 2500 trips thru the furnace. Rolock trays give a minimum of 6000 trips . . . then are rebuilt for additional service.

Former trays required maintenance by one full-time skilled worker and a part-time helper; "Serpentine" have required absolutely no maintenance. Moreover, other trays frequently jammed in the furnace, causing costly down-time of the whole line. "Serpentine," no jamming, no down-time.

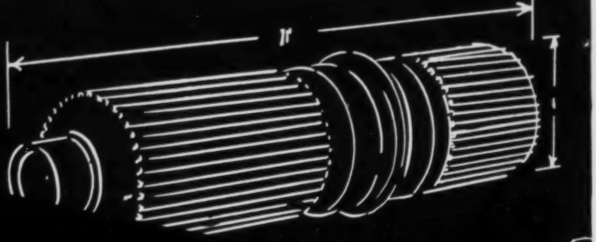
The answer, of course, is in the fully articulated "Serpentine" construction which resists warping to the highest degree. If this is one of your problems, write Rolock for practical solutions.

SEND FOR CATALOGS B-8 (Heat Treating) or B-9 (Corrosion Resistant).

Offices in: PHILADELPHIA • CLEVELAND • DETROIT • HOUSTON • CHICAGO • ST. LOUIS • LOS ANGELES • MINNEAPOLIS • PITTSBURGH
ROLOCK INC. • 1262 KINGS HIGHWAY, FAIRFIELD, CONN.

JOB-ENGINEERED for better work
Easier Operation, Lower Cost

7RL53B

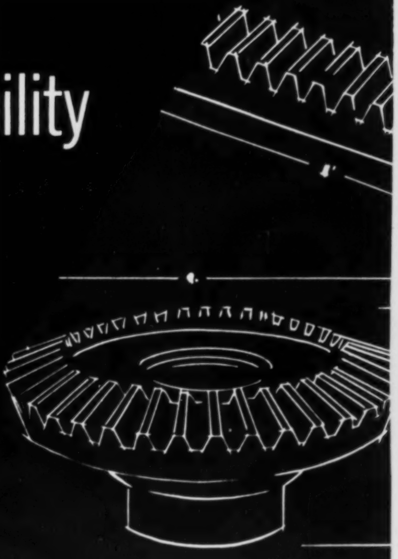


CRUCIBLE

MAX-EL

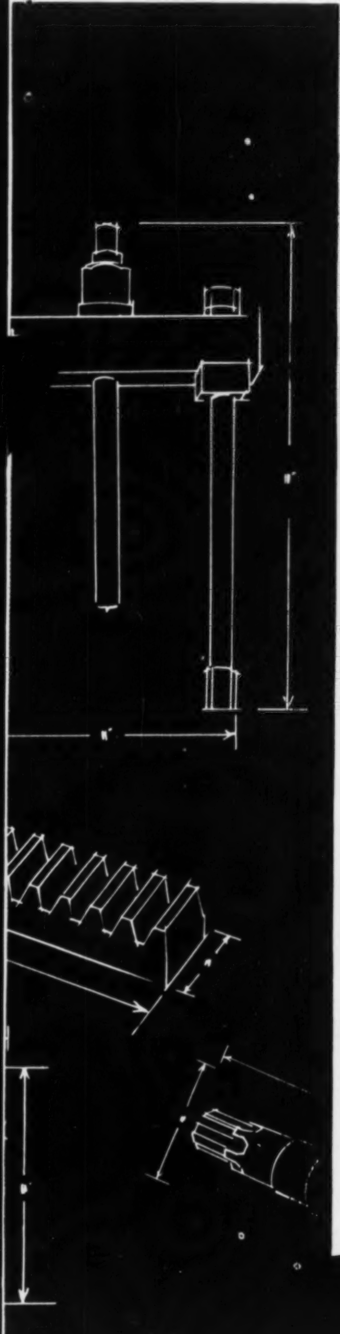
ALLOY STEEL

provides optimum machinability after full heat treatment



Join your Civil Defense Team NOW!

BRANCH OFFICES AND WAREHOUSES: ATLANTA · BALTIMORE · BOSTON · BUFFALO · CHARLOTTE · CHICAGO · CINCINNATI · CLEVELAND · DAYTON · DENVER · DETROIT · HOUSTON · INDIANAPOLIS · LOS ANGELES · MILWAUKEE



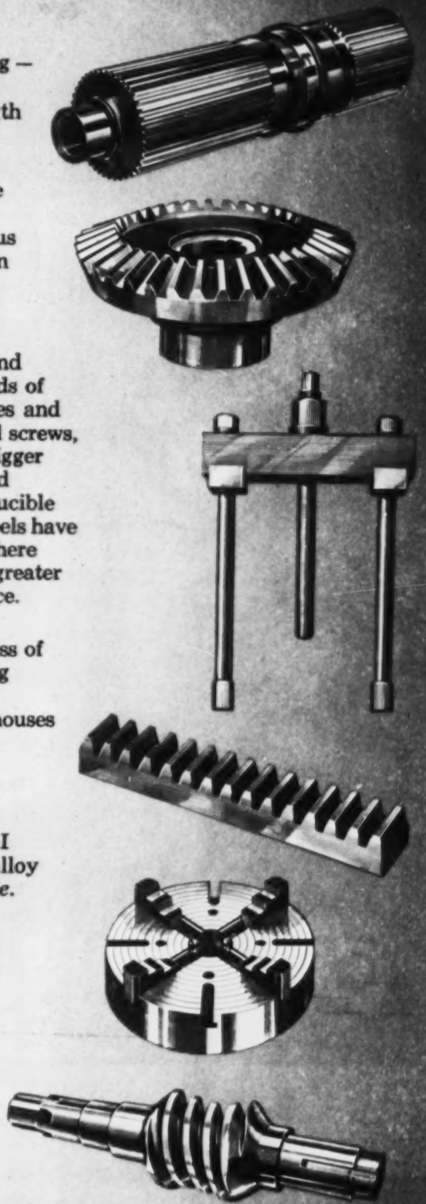
Here's an alloy steel that's a growing favorite of production men in metalworking — MAX-EL. It was developed by Crucible especially to provide a tough, high strength alloy that would be easier to machine after full heat treatment.

What's more, because of Crucible's unique mill set-up, MAX-EL sections are more accurate... bars are straighter — further plus values for the economy-minded production man. And MAX-EL comes in a complete range of sizes and shapes to meet your every need.

MAX-EL has reduced production costs and improved product performance in hundreds of applications such as machine tool spindles and gears, turbine shafts, lathe chuck jaws and screws, thread cutting and die head parts, ditch digger teeth, speed reducer gears and pinions, and truck axles. For MAX-EL is made in Crucible specialty mills where tool and other fine steels have been produced for more than 50 years... where quality is persistently controlled to a far greater degree than in ordinary steelmaking practice.

Then too, you can count on prompt, dependable delivery of MAX-EL regardless of the size of your order. Our special jobbing mill can turn out even 500 pound orders quickly and efficiently. And Crucible warehouses in key cities throughout the country carry stocks of MAX-EL so that in many cases you can get 24-hour delivery direct from a local source.

Crucible also makes a complete line of AISI and SAE alloy steels. So whatever your alloy steel requirements, be sure you *call Crucible.*



MAX-EL ADVANTAGES:

- ✱ ***better machinability***
- ✱ ***more accurate sections***
- ✱ ***straighter bars***
- ✱ ***full range of sizes***
- ✱ ***prompt delivery — in pounds or tons***

CRUCIBLE first name in special purpose steels

54 *years of Fine steelmaking* **ALLOY STEELS**

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

NEWARK · NEW HAVEN · NEW YORK · PHILADELPHIA · PITTSBURGH · PROVIDENCE · ROCKFORD · SAN FRANCISCO · SEATTLE · SPRINGFIELD, MASS. · ST. LOUIS · ST. PAUL · SYRACUSE · TORONTO, ONT. · WASHINGTON, D. C.

WHY IT PAYS TO BUY STEEL FROM WAREHOUSE

You don't tie up cash in inventory!

WHEN YOU BUY STEEL FROM WAREHOUSE, YOU GET:

- LOWER INVENTORY COSTS
- LOWER SPACE COSTS
- LOWER TIME COSTS
- LOWER CAPITAL INVESTMENT
- FASTER PRODUCTION
- FEWER INVENTORY LOSSES

When you let U. S. Steel Supply warehouses serve as your inventory stock, you do not have to invest large sums of money in steel. Your capital stays free for other purposes. And you rid yourself of other expenses such as interest and storage that increase the cost of doing business. U. S. Steel Supply will deliver the steel you need when, where, and as you want it. Contact your U. S. Steel Supply salesman.

U. S. STEEL SUPPLY

DIVISION

General Office
208 So. La Salle St., Chicago 4, Ill.

USS

Warehouses
and Sales Offices Coast to Coast

UNITED STATES STEEL

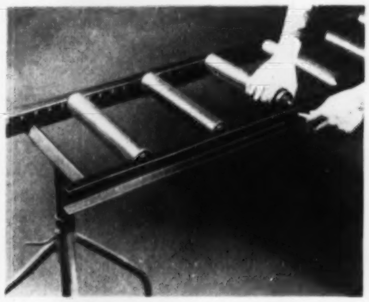
NEW PRODUCTS and equipment

Reply card on page 141 will bring you more information on any new products and equipment in this issue

Conveyor Frames

. . . variable roller spacing

Prepunched conveyor frames provide variable spacing of rollers in the field to suit changing requirements. It is possible to reposition rollers to meet future changes in product or container shapes. Multiple spacing on various hole centers is now furnished free when specified. This feature results in wider adaptability and often eliminates necessity for purchasing new conveyors simply to obtain different spacing. Sage Equipment Co.



FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Speed Control

. . . for electric trucks

Yale & Towne has developed a magnetic contactor-type time delay speed controller for use on all makes and models of electric industrial trucks. The magnetic Cam-O-Tractor is designed to provide smooth acceleration under all operating conditions. It consists of a magnetic contact unit and a master accelerating switch—the time delay unit.

Simplicity of design has resulted in few parts and in minimum maintenance. Materials Handling Division, Yale & Towne Mfg. Co.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Small Parts Blaster

. . . . eliminates hand work

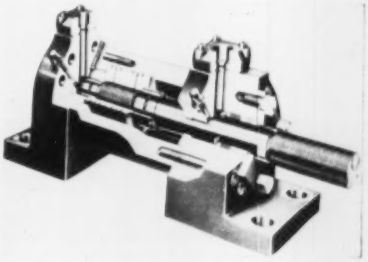
Pressure blast Roto-Matic wet-blaster is designed for the elimination of hand filing, grinding, wire brushing and chemical cleaning of small metal parts. Operator is seated at the front of the unit and simply loads and unloads workpieces from the rotating table which incorporates appropriate workholding fixtures. Because of its flexible design, it may be used for any number of finishing operations where speed and uniformity are essential. The only requirement in switching from one type of work to another is a change in work holding fixtures and a repositioning of blast guns. Cro-Plate Co. Inc.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Hydraulic Cylinder Line

. . . 800 basic models

Hydraulic Press announces a new, extensive line of hydraulic cylinders, consisting of more than 800 basic models, with a wide range of standard mountings and adjustable-stroke cylinders. Features of the line include heavy duty construction with generous safety factors, spring-loaded piston rod packings for positive sealing and mounting designs making them interchangeable for reuse. End covers are solid steel, accurately machined for perfect alignment of piston and rod.



They are available with male or female, single or double-end piston rods, with or without cushion and with combinations of mountings. Bore sizes in the standard cylinder line range from 1½ to 12 inches. Hydraulic Press Mfg. Co.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

Paint Stripper

. . . will not attack metals

Stripper removes paint, lacquer, enamel and other so-called impossible-to-strip finishes from a variety of metals. It will not attack metals and is especially recommended for cleaning workholders, finishing equipment such as spray guns, pressure tanks, etc., and rejected finished parts.

Econostrip is easy to use as water because it reduces with water up to equal parts for use. The stripper swells and then loosens the old finish. The item is then rinsed with water or can be hung on the beginning of the conveyor and cleaned by regular degreasing operation. Beck Equipment Co.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Analytical Comparator

. . . combines essential checks

Low-cost method of checking and recording gear accuracy is available with this analytical comparator. The machine was developed for both large and small-volume gear producers to reduce expense and use of floor space required by single function analytical checking equipment.

The principal feature of the machine is its combination of all essential gear checks. A table motion parallel to the axis of the gear checks the lead. A perpendicular motion checks involute or tooth profile, and the in-and-out motion of the indicator slide checks the spacing. Illinois Tool Works.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Alloy Hollow Drill Steel

. . . wider temperature range

Alloy hollow drill steel with a wider range of hardening temperature has been developed by Crucible Steel. The steel is reported to be easier to forge and requires only a simple annealing procedure for good machinability. Proper degree of hardness is easily attained.

Manufacturer claims the steel requires no change in heat treatment from that used for present popular chrome moly type of steels but has a wider latitude in heat treatment. This eliminates the necessity of segregating this steel at locations currently using the chrome moly type. Crucible Steel Co. of America.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Eccentric Workpiece Checker

. . . ignores normal variations

Compact Eccentricator eliminates need for observing maximum and minimum indicator readings and computing the difference when measuring workpieces for eccentricity.

It can be used for checking runout, squareness, straightness, wobbles, etc., while ignoring normal variations in size of different workpieces. It can also be used for sorting to sizes with over and undersize tolerance lights; or it can be employed on high-speed, completely automatic electronic gages to measure eccentricity, squareness, runout, straightness and wobble.

Model consists of two pivoted levers operated by movable gaging spindle, an adjustable tolerance-spread screw and pair of electrical contacts in one compact case. Federal Products Corp.

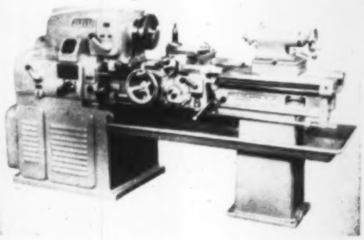
FOR MORE DATA—CIRCLE REPLY CARD NO. 8

General Purpose Lathe

. . . single dial control

General-purpose precision lathe, equipped with electronic motor control, features infinitely variable spindle speeds with single dial control. Speeds can be changed while machine is under cut. The electronic drive contains only three 18 amp, heavy-duty rectifier tubes in the power circuit, and one smaller rectifier tube in the control circuit.

Positive, no-slip belt drive is provided between motor and work spindle. Stepless speed, ranging from 15 to 1500 rpm, is provided by potentiometer control of both field and armature. Close speed control is achieved even under changing load. Hendey Machine Co.

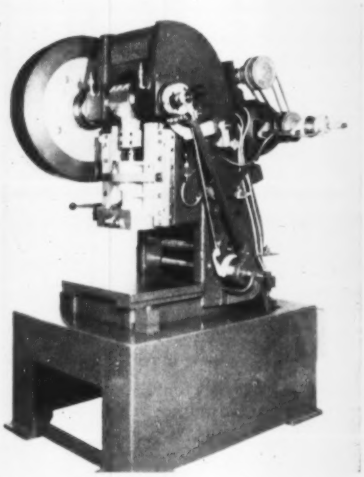


FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Adjustable-Drive Press

. . . longer clutch life

Largest model precision Flexopress, the C-50, has 50-ton capacity, a completely new Revertomatic adjustable speed drive. Latter permits clutching at low speed and building up to a predetermined high speed at an adjustable rate. Upon declutching, the press returns to low speed. This feature increases clutch life and insures accurate operation.



Other features: Intermittent feed roll brake in rhythm with the machine in automatic operation and cam-actuated to give braking when necessary, not continuously dragging. Gear train from feed roll to

Packed in Bags and Shipped on Pallets

Each bag holds 25 lb. of contained vanadium, so additions can be made without weighing. Bags prevent contamination and are shipped on pallets for easy and economical handling.

Electromet
TRADE MARK
Ferro-Alloys and Metals
LOT 7070
GRADE OPEN HEARTH
25 LB. CONTAINED VANADIUM
ELECTRO METALLURGICAL COMPANY
A DIVISION OF
UNION CARBIDE AND CARBON CORPORATION
NEW YORK

Use this New, Easy Method

. . . FOR ADDITIONS OF VANADIUM

You can handle additions of vanadium conveniently and economically with ELECTROMET ferrovanadium packed in bags.

Check these advantages:

- *Convenient Packaging*—The alloy is packed in strong five-ply, paper bags. These bags have a wide blue band across the middle, as well as blue edges and bottom, for positive identification. The bags prevent contamination and preclude any chance of mix up with other alloys.
- *No Weighing*—Each bag (25 lb. of contained vanadium) can be added without weighing.
- *Handling Costs Reduced*—Pallet shipments are available at no extra charge. Each pallet holds about 4,000 lb. of ferrovanadium—2,200 or 3,000 lb. of contained vanadium, depending on the analysis. Pallets can be conveniently unloaded and handled in your plant by lift truck or overhead crane. Handling costs are reduced and inventory-taking is simplified. And you don't have to return the pallets.
- *High-Quality Material for Every Need*—ELECTROMET ferrovanadium is uniform in analysis, closely graded, correctly sized, and physically clean. It is furnished in these grades:

	Vanadium	Silicon max.	Carbon max.
High-Speed Grade	50 to 55% or 70 to 75%	1.50%	0.20%
Special Grade	50 to 55% or 70 to 75%	2%	0.50%
Open-Hearth Grade	50 to 55%	8%	3%
Foundry Grade	50 to 55%	approx. 10%	3%

✻ **Immediate Delivery**—Vanadium is readily available and can frequently be used in engineering steels to replace part, if not all, of certain scarcer alloys.

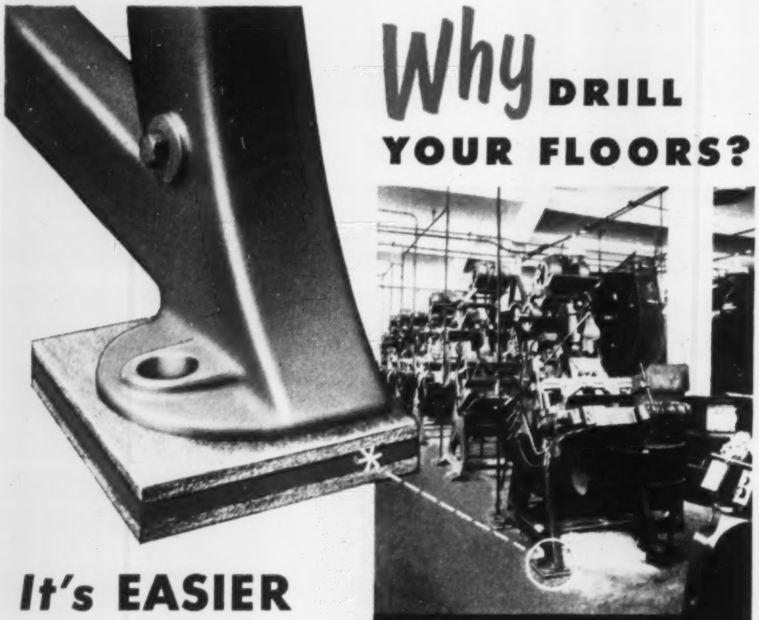
The term "Electromet" is a registered trade-mark of Union Carbide and Carbon Corporation.

✻ **Engineering Service**—Our staff of experienced metallurgical engineers is always ready to furnish technical assistance in the use of vanadium. Phone, wire, or write one of ELECTROMET's offices for additional information.

ELECTRO METALLURGICAL COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
OFFICES: Birmingham • Chicago • Cleveland • Detroit
Houston • Los Angeles • New York • Pittsburgh • San Francisco

In Canada: Electro Metallurgical Company, Division of Union Carbide Canada Limited, Welland, Ontario

Electromet
TRADE MARK
Ferro-Alloys and Metals



Why DRILL YOUR FLOORS?

Bliss V&O and Federal Presses mounted on UNISORB without bolts or lag screws.

It's EASIER to use...

UNISORB®

MOUNTINGS

Now you have a way to reduce vibration and noise . . . and at the same time eliminate the problems of drilling holes in floors and bolting machines in place.

It's easy to use UNISORB! First you select the grade best suited to your machines. Apply Felter's special adhesive. Let it dry overnight, and you're all set to go.

For the complete story about UNISORB . . . the mounting that eliminates 60-85% of transmitted machine vibration and reduces machine maintenance time . . . just return the coupon for your copy of "Why It Pays to Anchor Your Machines with UNISORB". There is no obligation, of course.

You Reduce VIBRATION NOISE MAINTENANCE

with UNISORB Mountings

- no bolts, no lag screws, no holes to be drilled, no floor damage
- Felters adhesive holds for keeps, yet permits re-positioning of machines. (Our UNISORB Booklet tells you how.)

LOOK FOR THE RED CENTER AND UNISORB BRAND MARK

THE FELTERS COMPANY

231 SOUTH STREET, BOSTON 11, MASS.

Offices: New York, Philadelphia, Chicago, Detroit, St. Louis
Sales Representative: San Francisco
Mills: Johnson City, New York; Millbury, Mass.; Jackson, Mich.

REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

MAIL COUPON FOR FREE BOOKLET TODAY!

Please send my free copy of the booklet containing the complete story of UNISORB Mounting.

NAME .... TITLE ....
(Please Print)
COMPANY ....
STREET ....
CITY .... ZONE ...... STATE ....

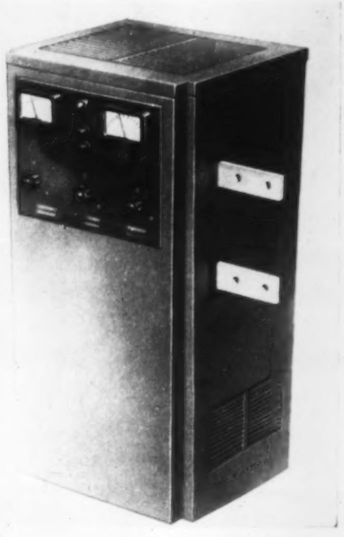
feed roll is always in mesh regardless of feed roll opening. Adjustable roll lift permits varying thicknesses of material. Precision Welder & Flexopress Corp.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Electroplating Rectifiers

. . . of lightweight construction

A line of electroplating rectifiers accommodates any application requiring a positive source of continuously smooth direct current, at capacities from 5 to 50,000 amp.



Available in five basic models, Wagner rectifiers are conservatively rated, three-phase circuit, selenium type rectifier stacks connected for 5 per cent ripple of unusually high efficiency and advanced design. They can be connected in series, parallel, or series-paralleled for almost any output of direct current power. All units are modified to meet particular requirements. Wagner Brothers Inc.

FOR MORE DATA—CIRCLE REPLY CARD NO. 22

(Continued on p. 144)

USE A REPLY CARD
Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

65. Tank Fabricating

Gussett Boiler & Welding Inc.—Two 4-page brochures just issued cover in the first case, Gussett's complete facilities, plant, material range, scope of fabrication, personnel, engineering service, industries served and experience. Second report discusses their tanks and ability to design and build a tank engineered to meet specific requirements.

66. Switch Lamps

National Carbon Co., division of Union Carbide & Carbon Corp.—The why's and how's of electric switch lamp lighting are given in a 6-page bulletin. Illustrated, actual case histories show that low initial conversion cost can be amortized from savings within approximately two years

67. Sawing Machine

Peerless Machine Co.—A 16-page brochure covers the revised Peerless Mechani-Cut hack sawing machine. It illustrates automatic, semiautomatic and manual conveyors used in conjunction with the saws. A chart shows recommended operating facts for maximum blade life at minimum cost per inch of metal cut.

68. Aluminum Wall Paint

Sherwin-Williams Co.—The use of aluminum as the principal ingredient in wall coating is covered in a brochure offered by Sherwin Williams. Color samples of Opal-Glo are included in the brochure along with "how to apply" instructions.

69. Casting Material Chart

Lebanon Steel Foundry—A slide chart giving facts on steel casting material selection has been developed by Lebanon Steel. It gives reference data on 19 carbon and low alloy grades and 17 stainless and corrosion-resistant grades in regular production. The chart shows nominal analyses, minimum mechanical properties and heat treatment of the grades. It also gives comparable ACI, AISI, ASTM, Hydraulic Institute, SAE, U. S. Military and Federal designation where applicable.

70. Tin Alloy Report

Tin Research Institute Inc.—Detailed information on the properties of a wide range of compositions of a range of new alloys is available in booklet form. It indicates how compositions may be varied to give strength, color or deformability, etc., as may be required. 10-pages, illustrations, diagrams.

71. Better Welds

Hobart Brothers Co.—A pocket-size welder's guide, "How to Get Better Welds," is a 39-page reference covering metals and electrodes, types of electrodes, essentials for welding procedures and a chapter on the Hobart school of arc welding. It is well illustrated and includes a comparative index of welding electrodes and a table of welding symbols.

72. Tools and Dies

Cleveland Punch & Shear Works Co.—A spiral-bound 32-page booklet, "Cleveland Punching Tools and Dies," gives detailed information on such subjects as proper care of punches and dies, ordering, standardization and the Cleveland system. Technical data covers standard and special punches, dies, couplings, nuts, sleeves, punch stems, rivet sets, pistons, chisel blanks, pin markers and shear blades. Illustrated, diagrams.

73. Interrupter Switch

Delta-Star Electric Division, H. K. Porter Co. Inc.—The booklet, "A Quick Break Interrupter Switch," describes the company's type QB device in various positions of opera-

---

STEEL 2-15-54

Penton Building, Cleveland 13, Ohio

Please send literature or detailed information on subjects circled at left to—

NAME ______ TITLE ______

COMPANY ______

PRODUCTS MANUFACTURED ______

ADDRESS ______

CITY AND STATE ______

This card ***MUST*** *be completely filled out. Please TYPE or PRINT*

1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

FIRST CLASS
Permit No. 36
(Sec. 34.9 P.L.&R.)
CLEVELAND, OHIO

BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

— POSTAGE WILL BE PAID BY —

STEEL
Penton Building
Cleveland 13, Ohio

Readers Service Dept.

tion on different types of air switches. Enlarged views from a movie film, taken at 190 frames per second during a field test, clearly illustrate the nature of the arc interruption.

74. Air Conditioner

Dravo Corp.—Bulletin No. 1307 describes a pulpit air conditioner designed and developed for use in industrial control areas where heat, dirt or fumes create hazardous working conditions. All mechanical features of the conditioner plus tables of capacities and dimensions of the different evaporators and condenser sections are listed in the 4-page report.

75. Knuckle Presses

Verson Allsteel Press Co.—A catalog issued by Verson gives design details and specifications on the complete line of Verson knuckle presses for squeezing operations such as coining, embossing or sizing.

76. Machining Steel Bar

LaSalle Steel Co. — A 4-page brochure describes Super La-Led, a free-machining, open hearth, leaded steel bar now available in a wide range of sizes. Its speed, efficiency, use as a crimp and as a roll threading material are covered. Illustrated.

77. Truck Performance

Towmotor Corp. — Stop-and-go-driving, combined with high compression engines and modern fuels, are the cause of the gum, carbon and varnish which lower engine efficiency and cost lift truck owners thousands of dollars anually. This is the conclusion of a folder released by Towmotor. It is prepared for readers interested in increased power, improved performance and greater savings.

78. Sheet Material

Homalite Corp.—An informative bulletin is available on Homalite CR-39, a clear, transparent, scratch and abrasion-resistant sheet material developed by Homalite from thermosetting resins. Its physical properties, some of its uses, are given in the 4-page bulletin No. 1052.

79. Hot Tap Tee Connections

Taylor Forge & Pipe Works—"Design of Hot Tap Tee Connections in High Pressure Pipelines," recently presented by Taylor Forge engineers at the eighth Annual American Society of Mechanical Engineers' Petroleum Division Conference has been made available generally. The paper deals with the problem of making branch connections to highly stressed transmission and distribution lines without interruption of fluid flow.

80. Bulb Thermometers

Minneapolis-Honeywell Regulator Co.—A 44-page catalog on remote bulb thermometers covers selection data, recorders and indicators, pneumatic control, electric control, program control, psychrometers, bulbs, tubing and fittings. Illustrated, charts, diagrams.

81. Prefinished Metals

American Nickeloid Co.—Fabrication techniques, uses and properties of prefinished metals are explained and illustrated in a 24-page booklet. It illustrates scores of successful applications in electrical appliance, stove and heater, lighting, housewares and display industries.

82. Metallic Abrasives

Cleveland Metal Abrasive Co.—A 16 page, two color, illustrated booklet covers Cleveland's complete line of metallic abrasives. It tells how to select the proper abrasive for individual needs. Various abrasives are listed with their consumption rate in pounds per wheel hour. SAE specification charts are given.

83. Testing Film

Sperry Products Inc.—"Ultrasonic Inspection," is the title of a 10-minute sound-color film describing development, theory, operation and application of the Sperry Ultrasonic Reflectoscope for nondestructive testing of metals and other materials. Latest techniques in ultrasonic testing of raw stock, finished parts and plant equipment are illustrated with scenes taken in Sperry's research laboratories and customers' plants.

84. Precision Instruments

Conklin Swiss Screw Machine Co., Division of Conklin Pen Co. Inc.—An 18-page catalog shows the division's precision instruments and the industries they serve. Facilities, secondary operations, tooling for the job and quality control are covered. Illustrated.

85. Tapping and Threading

Lassy Tool Co.—A 6-page circular dealing with tapping and threading equipment for the tool room and for production use is announced by

---

Readers Service Dept.

BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

— POSTAGE WILL BE PAID BY —

STEEL
Penton Building
Cleveland 13, Ohio

FIRST CLASS
Permit No. 36
(Sec. 34.9 P.L.&R.)
CLEVELAND, OHIO

1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

STEEL **2-15-54**
Penton Building, Cleveland 13, Ohio

Please send literature or detailed information on subjects circled at left to—

NAME TITLE

COMPANY

PRODUCTS MANUFACTURED

ADDRESS

CITY AND STATE

This card MUST be completely filled out. Please TYPE or PRINT

Lassy. The circular illustrates their three models of hand tappers and shows the large range of new accessories available. It also shows various methods for lathe tapping and threading and hand tapping of large work right on the drilling machine.

86. Process Control Instruments

Fischer & Porter Co.—20-page catalog lists a variety of flow meters, recorders, controllers, pressure regulators, sight flow indicators and chemical feeders. Complete instrument specifications and sizing nomographs for the two most common types of Flowrator meters are also given, covering both liquid and gas service.

EDITORIAL REPRINTS:

87. Copper-Base Alloys

A STEEL article discusses the fact that most wrought, copper-base alloys fall into a few groups for purposes of classification. These included coppers, nonleaded, leaded, tin and aluminum brasses, phosphor and silicon bronzes and nickel-bearing alloys. First step in standardization of copper alloys is taken by Copper and Brass Research Association.

88. Chain Classification

H. E. McCarthy and H. F. Reid of McKay Co., Pittsburgh, maintain that it pays to know your types of chain. One advantage is in purchasing—you will be less likely to buy a more expensive kind than you need. In this article appearing in STEEL, the authors classify the various types of commercial chain.

89. Size Determination

New techniques make high speed tool steel grain boundaries as clear as original hardened structure before tempering. Richard F. Harvey, Brown and Sharpe Mfg. Co., Providence, R. I., describes the simple and accurate procedure in an article written for STEEL.

90. Tailored Equipment

A new $5-million plant operated by Foster Wheeler Corp., Mountaintop, Pa., will turn out pressure vessels by the carload. In this STEEL article you will find a description of the machine innovations plus a Goliath that will do the work.

PRECISION

TO LESS THAN .0005 INCH

on H & S worms and worm gears

• Checking an H & S Worm & Gear on a precision inspection fixture for accuracy to less than .0005″ on both indexing and lead...an accuracy that insures perfect thread contour and balance. These exceedingly close limits are obtained by the company's use of its own exclusively designed grinding machines. It's precision in manufacturing that insures higher efficiency, longer life and quieter operation. Yet this extreme precision is only one of seven outstanding features that are your guarantee of the finest worms and gears possible.

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U. S. A.

Send note on Company Letterhead for 488-Page Catalog 49

(Continued from p. 140)

Tap-Holder

. . . with center hole

American Cam announces a Tap-Holder designed with the center-hole running all the way through rather than with the blind hole common to most conventional tap holders. This makes it possible to insert a full length tap without grinding off parts of the shank in order to seat the tool in a blind hole. Result is downtime savings of several minutes.

It is also possible to extricate a broken tap without removing holder bushing or disassembling holder. American Cam Co.

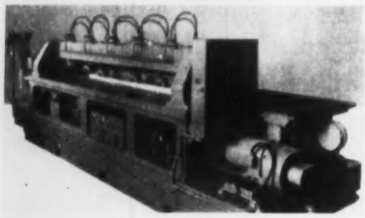
FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Speed Plate Saw

. . . positions stock easily

Speed plate made by Motch & Merryweather accurately handles aluminum plates up to 4 inches thick x 12 feet long. Coolant sump, chip compartment and chip conveyor are built into the base. Hydraulic tank and pump with its motor are in a centrally located recess.

Surface of the plate is equipped with free rollers in small cylinders actuated hydraulically to raise stock from surface of the table. Motch & Merryweather Machinery Co.

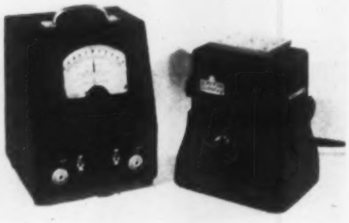


FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Internal Comparator

. . . made for small diameters

Pratt & Whitney announces the Model "D" electrolimit universal internal comparator. It is designed for extreme accuracy in the checking of internal diameters for 1/16 inch to 1¼ inch inclusive. It can be used for checking roundness and taper in addition to diameters.



The model is a bench type instrument and is furnished with an instrument cabinet containing a DDU meter calibrated 0.001 inch full scale across its 4½ inch dial giving a magnification of approximately 4500X. Each division represents twenty millionths of an inch. Pratt & Whitney, division of Niles-Bement-Pond Co.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Paint Line Expanded

. . . to include two new colors

Expansion of its line of Heat-Rem high heat resistant paints to include two new colors is announced by Speco. Now available in red and metallic blue, in addition to standard H-170 aluminum and XG-170 gold, this paint is said to withstand temperatures up to 1700° F without flaking, blistering or burning. It is made of aluminum flakes in a silicone base.

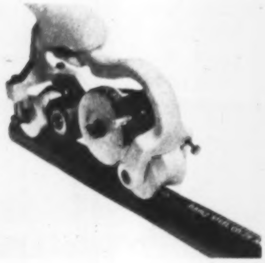
Applied by brush or spray gun it will air dry in approximately 30 minutes. Upon heating, it will fuse with the surface of the metal on which it is applied, forming a protective metal coating. Speco Inc.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Portable Printer

. . . obtains clear impressions

A compactly designed Matthews portable printer alleviates specific marking problems for industrial users. It will print trade names, codes, inspection marks, etc., on flat, round, square or hexagonal surfaces. It automatically adjusts itself to size and shape of material to be marked.



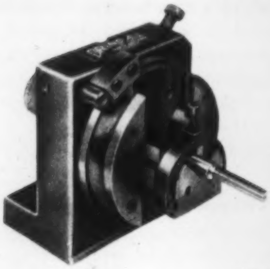
Made of durable aluminum, the printer is light enough for easy handling, permitting the operator to carry it anywhere in the plant to the location of stock. It weighs about 8 pounds. Self-contained ink fountain makes for consistency of the ink, and design of the fountain prevents over-inking or leakage. Jas. H. Matthews & Co.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Grinding Fixture

. . . adapted to grind carbide

An improved version of Harig's grinding fixture is designed for faster, more versatile perforator grinding operations. It allows greatest possible accuracy over wide operating range. It grinds all types of regular and irregular contours concentric with perforator shank within plus or minus 0.0002-inch. Radius generating feature



SOLAR'S

SURE-SPEC STEELS

steel for any part
you make for any product
anytime at minimum cost!

We are very proud of this customer's 1954 TV receiver line. This set has a bigger than life 27" screen. If you are interested, write us and we will give you the manufacturer's name.

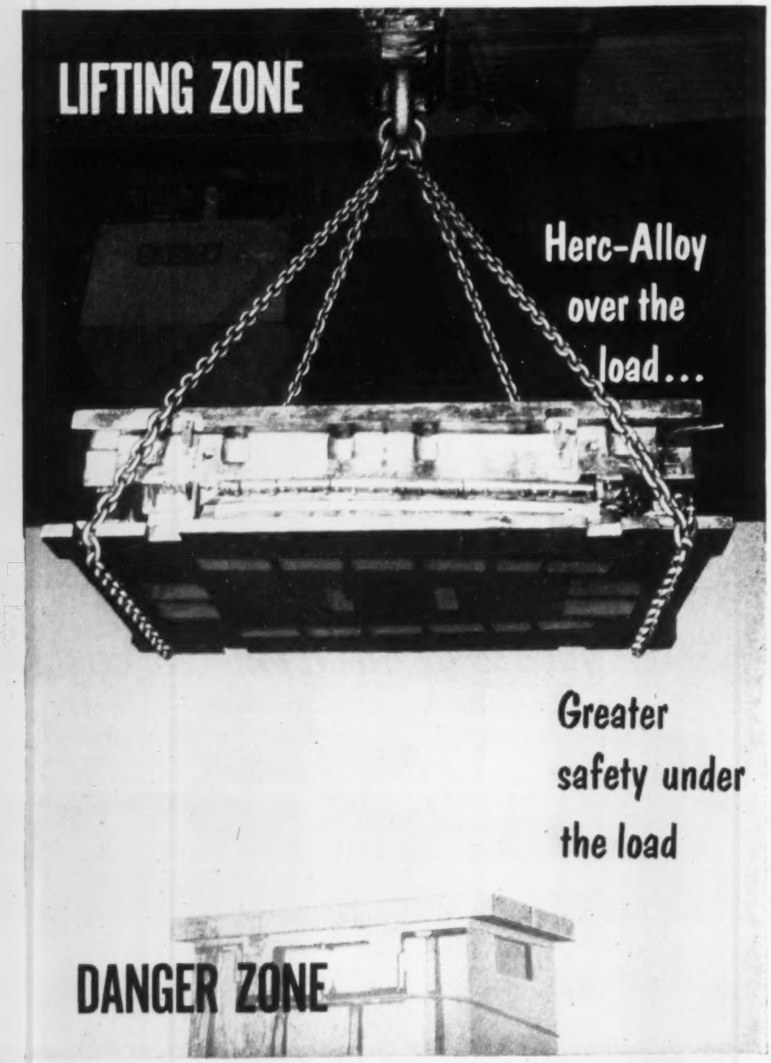
"for service dependable as the sun"

SOLAR STEEL CORPORATION

General Offices • Cleveland, Ohio

SALES OFFICES: Bridgeport • Chicago • Cincinnati • Cleveland • Detroit • Grand Rapids Kalamazoo • Los Angeles • Milwaukee • Nashville • Philadelphia • River Rouge Rochester, N.Y. • Toledo • Union, N. J. • Washington, D. C. • Worcester, Mass.

FLAT ROLLED AND BAR AND TUBE STOCKS AND PROCESSING SERVICES FROM 11 PLANTS



HERC-ALLOY SLING CHAINS
CM

SPECIFY
HERC-ALLOY
SLING CHAINS

Write for Data Book

HERC-ALLOY ...is the original alloy steel chain

Herc-Alloy Sling Chains bring you many advantages. First and foremost...they offer maximum protection to men and materials. Secondly, their special alloy steel, processed by men with unmatched heat treatment know-how, gives long life and economy. Third, they weigh less (without any sacrifice in tensile strength) and are far easier for workmen to handle. That's why so many well-known plants are switching to Herc-Alloy Sling Chains.

CM HOISTS AND CHAIN

COLUMBUS McKINNON
CHAIN CORPORATION
TONAWANDA, NEW YORK
DISTRICT OFFICES: NEW YORK, CHICAGO, CLEVELAND
In Canada: McKINNON COLUMBUS CHAIN LIMITED, ST. CATHARINES, ONTARIO

makes the fixture particularly adapted to carbide grinding.

Twenty-four 15-degree graduations on a rotating index plate assure accuracy. Adjustable stops permit a swing to any number of degrees. Harig Mfg. Corp.

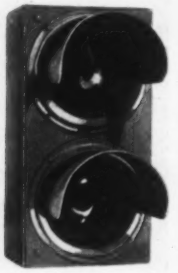
FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Traffic Lights

. . . reduce plant accidents

Signal lanterns for laning traffic are proving invaluable. The cost is moderate and the reduction in traffic accidents substantial.

Lintern's lanterns are equipped with aluminum reflectors, hoods and high-quality lenses giving brilliant signals under all conditions.



Constructed of sheet steel, securely welded, they are weatherproof and dustproof. They are available in single, double or triple-lamp units for one and two-way signals. Lintern Corp.

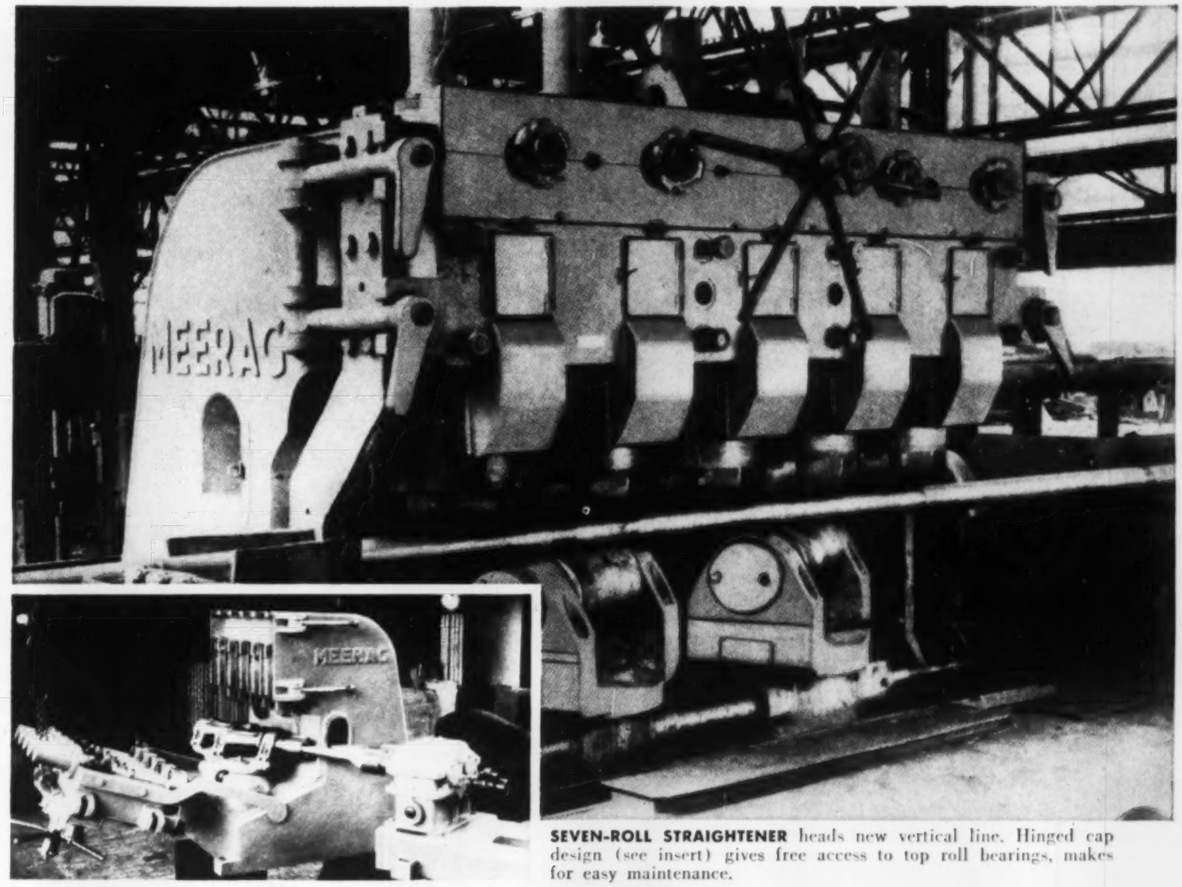
FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Acid Type Cleaners

. . . for large or heavy products

A group of phosphoric acid-type cleaners for products that are too large or heavy to be phosphate coated with normal production methods and for manufacturers whose production does not warrant elaborate equipment for phosphate cleaning, have been created by Detrex. The 800 series meets every government specification for this type of product.

According to the manufacturer, the cleaner can be applied by any practical method such as brush, sponge, dipping, or flowed-on and can be specified to incorporate such properties as detergency, oil solvency or rust and scale removal. In addition it also depos-



SEVEN-ROLL STRAIGHTENER heads new vertical line. Hinged cap design (see insert) gives free access to top roll bearings, makes for easy maintenance.

New straightener line speeds mill production

- Straighten tubes and bars at high speed in a single pass without yield marks? Handle a wide range of stock sizes with each set of rolls? You can do both with one of the new Mannesmann-Meer vertical skewed roll straightening machines.

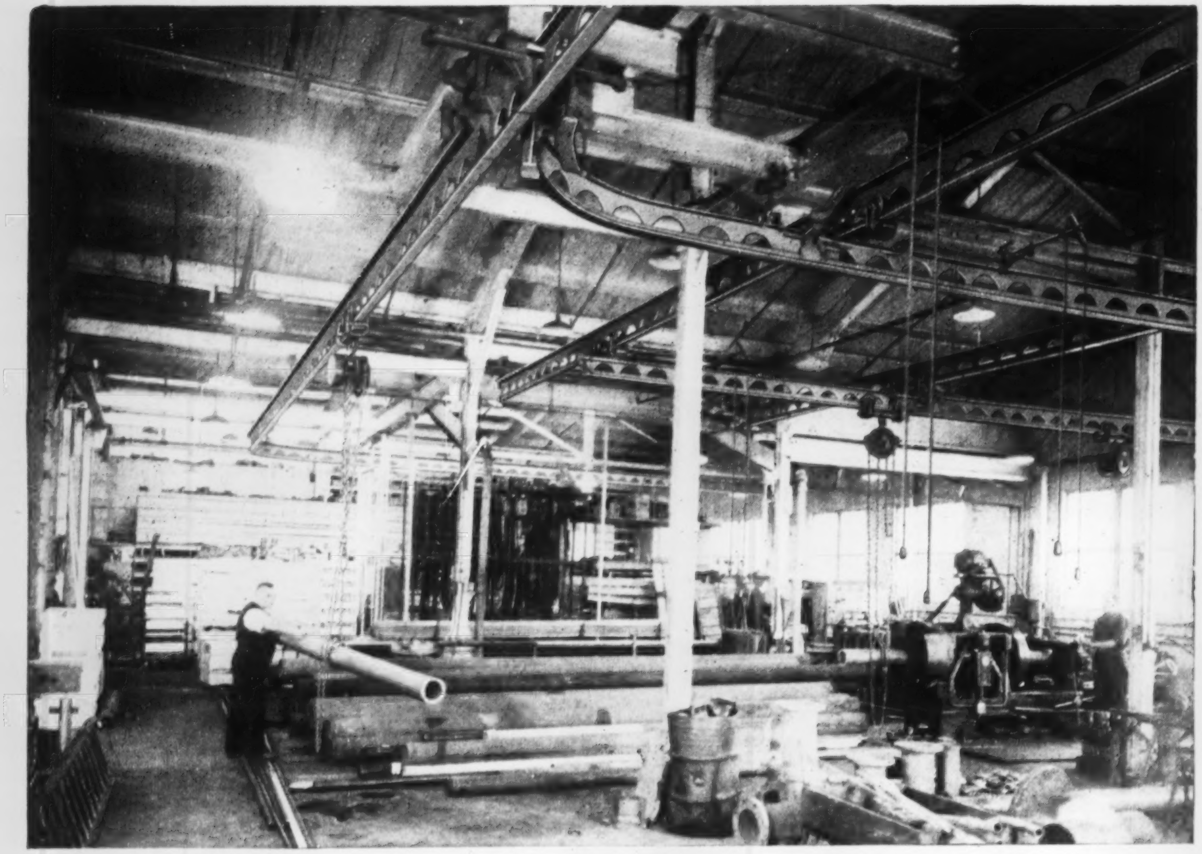
The large number of these Meer rolls and their special hyperbolic shape improve the surface quality of the work piece, and prevent yield marks which ordinarily result when stressing material through the elastic limit. Vertical arrangement of the rolls helps speed production by keeping bottom level of the straightened material constant for easier access to inlet and outlet tables. All rolls and shafts are supported in anti-friction bearings, and perfect synchronization is insured by a special Mannesmann-Meer drive.

For complete information on vertical or horizontal straightening machines, or any mill machinery for the high-speed production and finishing of pipe and tubing, write to the address below.

M.3.5

MANNESMANN-MEER
ENGINEERING & CONSTRUCTION COMPANY
900 Line Street, Easton, Penna.

WORLD SPECIALISTS IN HIGH-SPEED TUBE-MILL MACHINERY

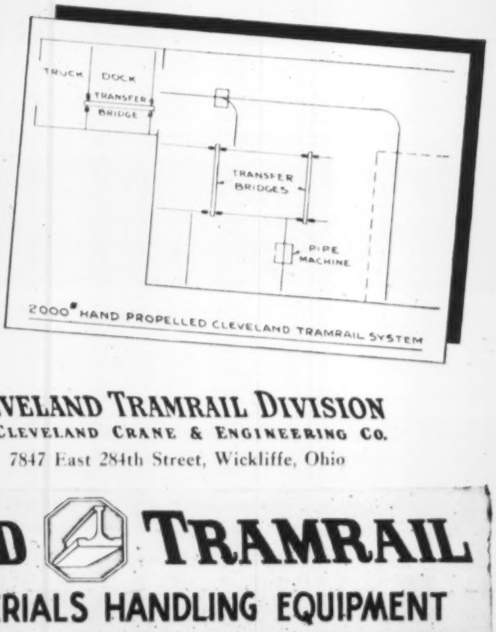


TRAMRAIL SYSTEM *SIMPLIFIES* PIPE HANDLING

Long, heavy pipes of various diameters are easily handled by one man with a simple hand propelled Cleveland Tramrail system at the Garth Company, Division of Robert Mitchell Company, Ltd., Montreal, Canada. The system includes overhead trackage and three transfer bridges, one of which is used for unloading trucks.

The Tramrail equipment makes it easy to place pipe in the threading and cut-off machines and support it while being worked on in these machines.

The overhead system which has a capacity of 2000 lbs. handles the pipe in a fraction of the man-hours that would otherwise be required. It requires practically no maintenance and is an important aid to safety.



2000# HAND PROPELLED CLEVELAND TRAMRAIL SYSTEM

Cleveland Tramrail
ENGINEERING AND APPLICATION DATA

GET THIS BOOK!
BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7847 East 284th Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

its a fine-grained crystalline structure of iron phosphate that becomes chemically interlocked with the metal itself. Detrex Corp.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Aluminum Sheet

. . . for economical roofing

Alcoa has enlarged its line of industrial roofing materials with the addition of a new, lightweight corrugated aluminum sheet. Made of high strength alloy, the product is only 0.024-inch thick.

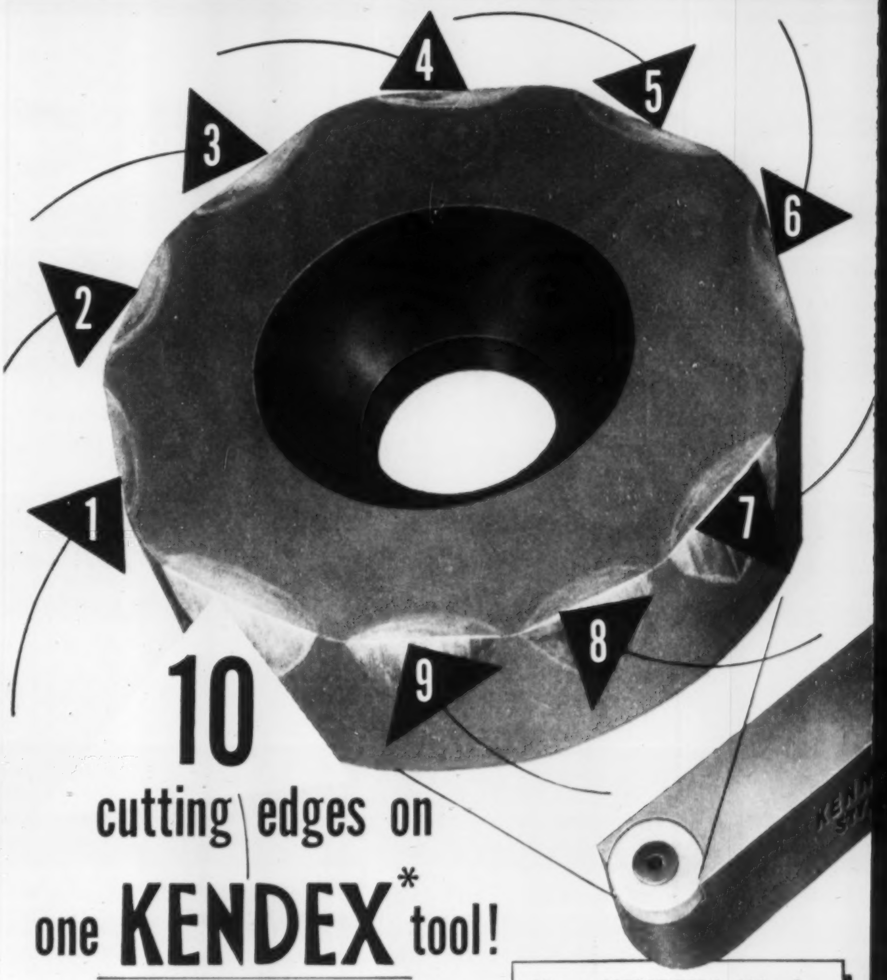
This new sheet can be used with substantial economies for both new construction and re-roofing jobs. It is also well adapted to use as the inner sheet, or according to the manufacturer, as both inner and outer sheets of insulated wall construction that incorporates center section of insulating material such as glass fiber. For wood-frame structures, such as farm buildings and storage sheds, its allowable spans permit substantial saving in roof deck lumber requirements. Aluminum Company of America.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Electric Gage

. . . uses air as measurer

An air electric gage developed by Federal measures two OD's of a high polished bearing simultaneously. This is accomplished by a combination of air gaging and electrical signalling with the measurements being taken by a dual air snap and then transferred through an air-electric switch to the electricator unit. The unit, in turn, operates a set to tolerance light. If both dimensions are good, a green light flashes. If



10 cutting edges on one KENDEX* tool!

No tool grinding expense and *minimum* machine down time for tool changing—these are the advantages you obtain from multiple-edge Kendex "throw-away" insert tools. For example:

A Kendex round insert, used to bore 2½" cast iron stators, machined 300 pieces before one cutting edge dulled. Then, without removing the shank from the boring bar, the "button" was revolved to a new cutting position, until 3,000 stators were machined with the insert's 10 cutting edges. Best previous performance, by a conventional brazed tool, was 400 stators per tool grind.

Kendex precision-ground buttons have Kennametal's high wear-resistance, for long life. Screw-mounted, they can be rotated in seconds to new cutting positions without removing or resetting the tool holder . . . a great time-saving feature. When all cutting edges are used, the insert is thrown away—replacement cost is slight compared to that of regrinding.

Only Kennametal makes Kendex "throw-away" inserts. Ask your nearest Kennametal tool representative to help you apply this cost-saving tooling to suitable operations in your plant. Kennametal Inc., Latrobe, Pa.

*Registered Trade-Marks

How KENDEX* Works

1 Hard, strong, wear-resistant Kennametal is molded into square, round, or triangular Kendex inserts, which are precision ground.

2 Kendex inserts are mounted to suitable tool holders with socket head screws.

3 When edge becomes dull, insert is turned to new cutting position. When all cutting edges have been used, insert is thrown away; no regrinding.

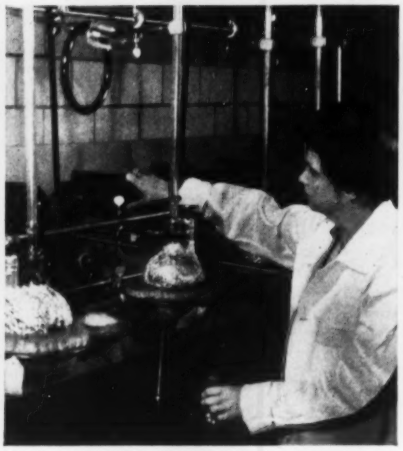
KENNAMETAL*

CEMENTED CARBIDE TOOLING THAT INCREASES PRODUCTIVITY

SALES OFFICES IN PRINCIPAL CITIES

Compare

2. Laboratory and service tests of Parker compounds determine tensile strength and maximum compression set; then make sure these rated characteristics are held.



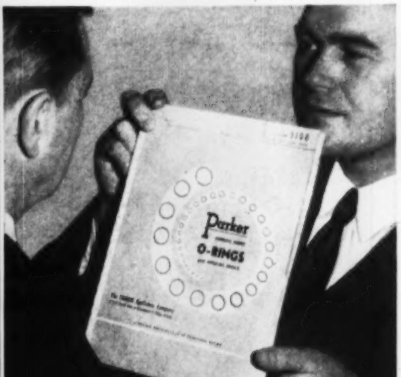
3. Fluid and temperature tests check compound resistance to oils, fuels and chemicals at high and low temperatures ... assuring the long life of Parker O-rings.

4. Precision molding by exclusive, automatically controlled methods assures close-tolerance fits. Parker has molds for *every* standard O-ring size.

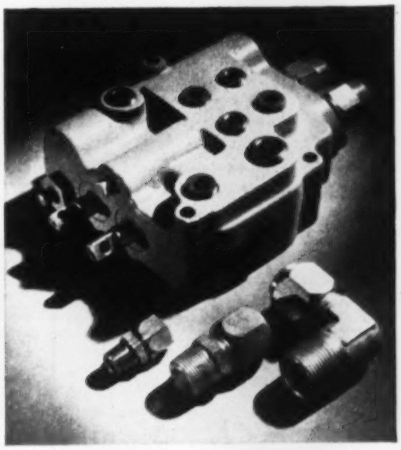
actual O-ring samples

Prove by comparison tests how Parker O-rings seal better and last longer

1. For trouble-free, leakproof sealing, you can depend on Parker O-rings. They are precision molded of superior compounds that have been developed as the result of thousands of tests. When you ask about Parker O-rings, we check your specifications to determine which of our O-rings is exactly *right* for your *specific* application. Then, we invite you to make your own comparison tests of Parker O-rings with any other make. Here are some of the reasons why you'll find that Parker O-rings seal better and last longer:



5. Get complete data in Catalog No. 5100. Ask your Parker representative or mail the coupon for a copy. Then, compare actual sample O-rings.



6. What other Parker products for *hydraulic* and *fluid* systems interest you? Triple-lok flare fittings? *Ferulok* flareless fittings? New directional control valves? Any others?

THE PARKER
APPLIANCE COMPANY
Section 504-N
17325 Euclid Avenue
Cleveland 12, Ohio

Please send me the following information:

☐ O-ring catalog No. 5100
☐ Custom-molded rubber catalog No. 5201A1
☐ Information about these other specific Parker products

NAME__________ TITLE__________
COMPANY__________
ADDRESS__________
CITY__________ STATE__________

RUBBER PRODUCTS DIVISION
The Parker Appliance Company
17325 Euclid Ave., Cleveland 12, Ohio
1538 South Eastern Ave., Los Angeles, Cal.

Parker
Hydraulic and fluid system components

SHENANGO Centrifugal CASTINGS ... KEY TO SAVINGS

You'll do better WITH SHENANGO CENTRIFUGALLY CAST PARTS

HERE'S WHY . . . Shenango centrifugally cast parts offer many inherent advantages that can help you avoid trouble and save time and money.

For example, due to the centrifugal casting action, you get a more uniform, pressure-dense metal, free from sand inclusions, blow holes and other often-hidden defects. You get higher strength, greater wear resistance, better elongation—longer lasting parts, better able to withstand severe service of *any* kind.

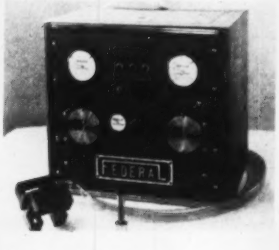
So if your plans call for symmetrical shapes, anywhere from tiny bushings to huge rolls, ferrous or non-ferrous, rough or finished, check with Shenango. Company after company finds it a good way to do a better job at lower cost.

SHENANGO-PENN MOLD COMPANY
Centrifugal Castings Division
Dover, Ohio
Executive Offices: Pittsburgh, Pa.

SHENANGO

ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE® METAL

either diameter is undersize the amber light flashes, while a red light indicates oversize. A glance



at dials will tell the operators which dimension is off and how much. Federal Products Corp.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

Pneumatic-Tired Truck

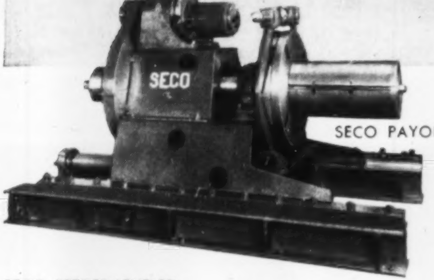
. . . good on adverse ground

A 15,000-pound-capacity lift truck, the AC-ISO manufactured by Hyster Co., is mounted on 8.25 x 20 pneumatic tires and is powered by a heavy-duty water-cooled industrial engine. It features an exclusive engineering achievement to assure excellent job performance in adverse ground conditions. Balanced weight, greater power and large size tires permit loading or unloading in roughest terrain. Other features are high degree of visibility, fully roller mounted uprights, extreme braking area and brute-type body construction.

The truck, claimed to be the shortest in over-all length, and narrowest width in its field, has a capacity of 15,000 pounds at 24-inch load centers. It is also available in capacities of 16,000 lbs at 24-inch centers and 18,000 at 24-inch load centers. Hyster Co.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

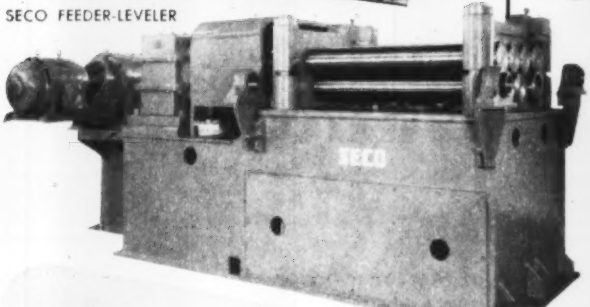
Big, New HEAVY-DUTY SECO 48" SLITTING LINE


SECO PAYOFF REEL

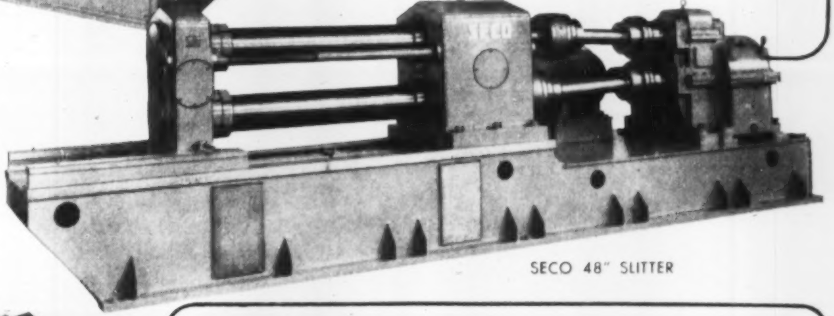
Sets New Standards

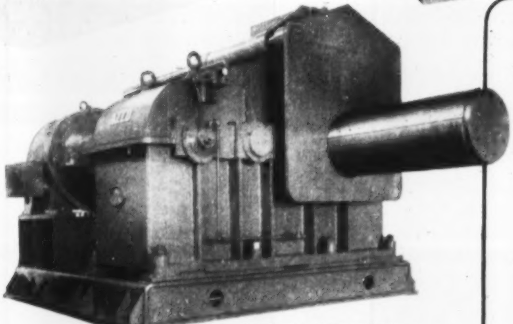
- in Performance and Production
- in Fast, Profitable Operation
- in Safe Handling of Coils Up to 32,000 Pounds

This rugged new SECO Slitting Line handles steel ¼" thick in coils 48" wide, weighing up to 32,000 pounds. The efficient, streamlined SECO Slitter, shown below, makes seven cuts in .250" stainless or low carbon steel at slitting speeds of 100 to 400 feet per minute. This slitter has overrunning clutches for pull-thru slitting. Arbors are 9½" diameter with 16" knives.

SECO FEEDER-LEVELER


SECO SLITTING EQUIPMENT— the latest in design, engineering and efficiency


SECO 48" SLITTER


SECO TENSION REEL

Exceptional quality and accuracy are built into each piece of SECO equipment—assuring efficient, trouble-free, high production.

The Payoff Reel (top left) is of the positioning type, with power feed-up. The Feeder-Leveler is, like other SECO equipment, of the most modern design. The Tension Reel (left) has a 54" long automatic block, 22" in diameter, hydraulic stripper, 250 H.P. motor.

Call or write SECO on your requirements for slitters or other cold-rolled strip mill equipment. We're glad to furnish full information—no obligation. Our years of engineering experience and complete plant facilities are at your service.

SECO

STEEL EQUIPMENT CO.

20805 AURORA ROAD • CLEVELAND 22, OHIO

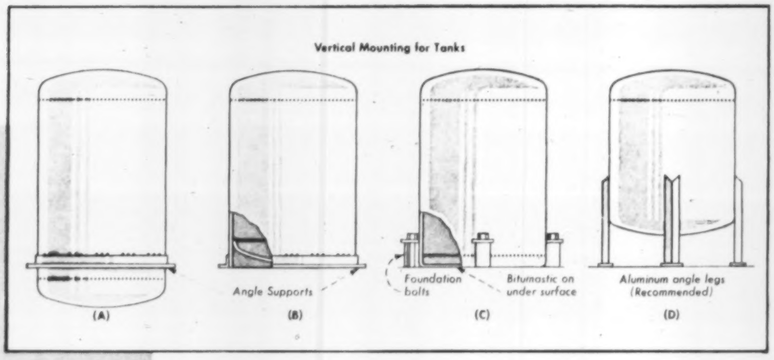

Vertical Mounting for Tanks
Angle Supports
Foundation bolts
Bitumastic on under surface
Aluminum angle legs (Recommended)
(A)
(B)
(C)
(D)

Fig. 1

Reynolds Metals Co

HOW TO WELD
ALUMINUM TANKS

Material has many points in its favor in the construction of stationary and mobile tanks, including lightness, corrosion resistance, nontoxicity and nonsparking properties

ALUMINUM has several points in its favor for the contruction of industrial tanks (stationary and mobile) and pressure vessels—lightness, corrosion resistance, nontoxicity, high heat reflectivity, thermal and electrical conductivity and nonsparking properties.

Transporation and aircraft people especially look for lightness. Those concerned with corrosion resistance in weathering, processing, storage and transporting find that aluminum will handle a host of materials such as hydrogen peroxide, 95 per cent nitric acid, distilled water, acetic acid, latex, fatty acids, essential oils, mineral oils, petroleum products, paints, varnishes, resins, formaldehyde, glycerine, cellulose acetate and tartaric acid.

Food processors, canners and brewers want nontoxicity in evaporators, storage tanks, truck tanks, vats and similar equipment. Where gases or liquids expand or evaporate, heat reflectivity and thermal conductivity become vital. And flammable and explosive materials require a nonsparking material with high electrical conductivity.

Stationary—In the design and fabrication of stationary tanks and pressure vessels, Reynolds Metals Co. sets out some of its practices in figures 1 to 3. Accepted methods of supporting vertical and horizontal tanks are also shown. Where tanks contact the ground or where supporting materials (other than aluminum) are used, a bitumistic coating is applied to contacting surfaces to stem corrosion.

Open ends of a tank have formed flanges or continuously-welded, aluminum angles. Flanges are used whether the tank has a bolted cover or is left open. Manholes and removable heads for pressure vessels are designed to insure tightness. Aluminum is more rigidly supported in bolted joints than steel—it is generally satisfactory to use steel bolts; and steel washers must be used under the bolt head and nut in the absence of a steel backup flange.

All steel parts should have all scale or rust removed prior to the application of a suitable primer. After assembly, all exposed steel parts should be given a finish coat of aluminum paint. Steel should be insulated from aluminum where galvanic attack is expected. Gaskets and bushings of a neutral material are used.

Fabrication—Fig. 3(B) shows methods of construction and joining of heads Pipe connections (Fig 3C) are preferably butt welded. This method tends to minimize distortion of the tank due to welding—fillet welding may be used on material thicker than 3/16 inch. Aluminum stubs with forged steel flanges are recommended.

Welding with either oxyhydrogen or oxyacetylene gas is satisfactory, according to E. V. Sharpnack Sr. of Reynolds. If Heliarc welding is used, the inclusive bevel angle should be 50 to 70 degrees—this way filler wire consumption is about 54 per cent less.

For Aircomatic welding, the inclusive bevel angle should be 25 to 40 degrees—for 78 per cent less filler wire consumption. If oxyhydrogen or oxyacetylene gas is used, all completed welds should be immediately and thoroughly cleaned to remove all flux residue.

Mobile Tank—Here a new element—vibration—enters the picture; and different techniques must be used. Diamond Building Products Corp., Cleveland, handles the problem this way in the construction of 450-gallon, aluminum trailer tanks:

Lap joint construction (with double welds inside and out) is the rule. Lap welds are used on shells, heads and pipe connections. Baffles to stabilize girth and height are standard; and gussets are placed at joints that are under tension and would split in service.

In making pipe connections, Diamond places the smaller member inside the larger (flanging the latter in or out). Sam Spector, general manager, says their experience with butt welding on this type work in the lighter gages has not been too satisfactory. With butt welding, metal grows and causes misalignment.

Rubber pad insulation guards against galvanic attack on this job.

The Line—At this completely integrated plant, tanks are welded on a continuous line. Inert-arc welding machines (Sigma, Aircomatic and Fillerarc) are generally operated at 300 amps.

Material (3S in the ½ to ¾ hard conditions) ranges from 0.050 to 0.250 inch. Hand-fed wire for automatics runs from 1/16 to 3/32 inch.

After coming off the line, tanks are tested under 6½ psi of air; about 40 per cent have no leaks; remainder averages from one to two. Completed assemblies are then cleaned, etched and painted.

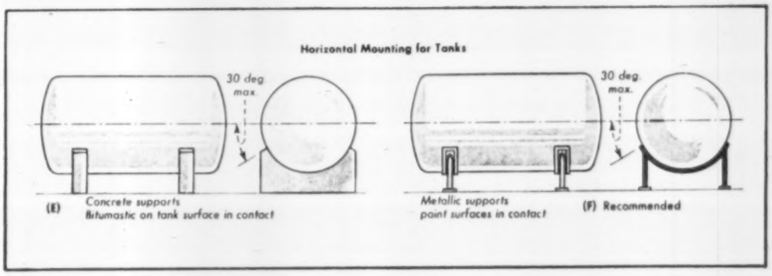
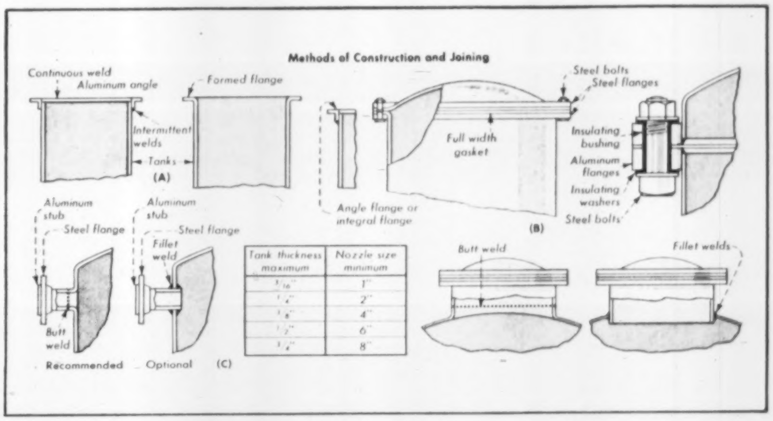
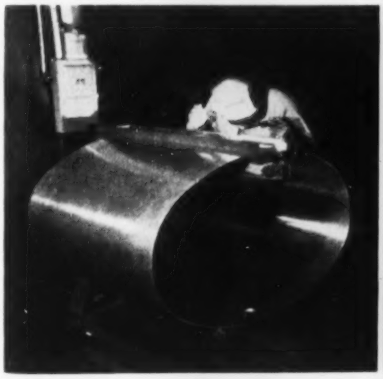

Horizontal Mounting for Tanks
30 deg max.
30 deg. max.
(E) Concrete supports
Bitumastic on tank surface in contact
Metallic supports
paint surfaces in contact
(F) Recommended

Fig. 2


Methods of Construction and Joining
Continuous weld
Aluminum angle
Formed flange
Intermittent welds
Tanks
(A)
Steel bolts
Steel flanges
Full width gasket
Angle flange or integral flange
Insulating bushing
Aluminum flanges
Insulating washers
Steel bolts
(B)
Aluminum stub
Steel flange
Butt weld
Aluminum stub
Steel flange
Fillet weld
Recommended
Optional
(C)
Butt weld
Fillet welds

Tank thickness maximum	Nozzle size minimum
3/16"	1"
1/4"	2"
3/8"	4"
1/2"	6"
3/4"	8"

Fig. 3



Lap welds are the rule in the construction of mobile-type tanks. Here longitudinal lap seam is being made

Diamond Building Products Corp.

Manhole is inert-arc welded to tank shell. Double welds are dictated by vibration inherent in service

Properties—Lap welded joints of 3S to 3S (prepared by the heliarc method, using 43S filler rod) have tested out with tensile strength superior to those of unwelded 3S aluminum. These results were obtained with weld penetrations as low as 15 per cent.

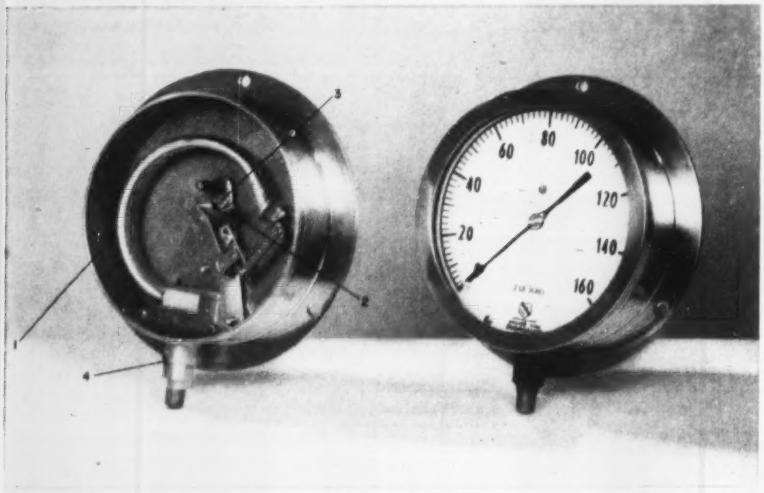
Salt spray tests also indicate no loss in tensile strength or ductility in 3S to 3S combinations. Pitting and intergranular attack probably do not go deeper than 0.001 inch.

(Advertisement)

BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

Bridgeport Brass Co. MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



Interior of Ashcroft Duragauge at left shows where copper-base alloys are widely used because of their dependability and corrosion resistance. Brass and Bronze are especially important at the following key points: (1) Bourdon Tube, (2) Gear Segment, (3) Rotary Geared Movement; (4) Socket. Courtesy of Manning, Maxwell & Moore, Inc., Stratford, Conn.

Quality Gauges Rely on Copper Alloys

How many of us realize the importance of dependable gauges which are so vital to modern living. Wherever there's a need for accurate measurement, you'll find gauges. In fact, there are applications beyond number where gauges automatically safeguard lives, equipment, and uniformity of product.

Just as gauges are essential to the making of many things, copper-base alloys are vital to the accuracy and dependable performance of their sensitive yet rugged components.

Quality gauges designed for air, water, steam, oil and other media use high corrosion-resistant copper alloys because accurate readings are imperative in spite of constant surges, fluctuations, pulsations, vibrations, and corrosive attack encountered in service.

In the pressure gauge illustrated, one of the most important parts is the curved Bourdon tube whose elliptical shape and the accuracy of the tube-wall curvature, as well as the physical properties of the metal, are all very critical.

As pressure is applied inside the Bourdon tube, it tends to straighten out, resulting in deflection of the free end of the tube. This end of the Bourdon tube is linked to the gear segment in mesh with the pinion gear that moves the pivot shaft to which the pointer is attached. The amount of motion is transmitted to the pointer which moves over a calibrated scale and indicates the applied pressure.

The temper and spring characteristics of the metal in the Bourdon tube prevent it from becoming "set" after repeated flexing. Any change in its physical characteristics or corrosive attack would affect the accuracy of the gauge. Consequently, copper-base alloys are widely used in gauge construction, which comprises the rotary geared movement that is actuated by the Bourdon tube, the socket, plates, segment, columns, pivot shafts, pinion gear, hair spring, bushings, link and link screws, and closing end for the tube and the case.

Phosphor Bronze Widely Used in Rotary Geared Movement

Phosphor Bronze, Grade A, long known for its excellent spring properties, its fine resistance toward fatigue and corrosion is generally used for Bourdon tubing for pressure gauges designed for medium and low pressures and vacuum measurements. This alloy contains about 95% copper, and 5% tin.

In some instances, Alloy 21, which contains approximately 81% copper, 1.1% tin and balance zinc, is used for making Bourdon tubing for low pressure steam gauges.

Phosphor Bronze, Grade A, is also used for the hair spring, which takes the back lash out of the rack and pinion assembly.

The gear segment bushing and link screws are also made from Phosphor Bronze on the higher quality instruments, although leaded brass is very often used for these applications.

Leaded Brass for Ease of Machining

The plates, blanked, pierced, drilled, reamed and tapped, are made of clock brass for clean, sharp blanking and free machinability. This contains about 62% copper, 2% lead, and balance zinc. The socket, into which the Bourdon tube is mounted and on which the movement is attached, whose end is threaded for pipe connection, is square free-machining brass rod, Alloy 6—copper about 61%, lead 3.4%, zinc remainder. Drilling, turning, milling, threading and tapping are done at great speeds on this high-leaded alloy.

Laboratory Service Available

The selection of the correct material for all types of products can be simplified by contacting our nearest district office for information. Machining, corrosion and other problems are discussed in our "Technical Handbook," a copy of which will be sent to you on your request. Be sure to write for your copy on your company stationery.

(1290)

CAUSES OF CORROSION

This article is one of a series of discussions by C. L. Bulow, corrosion metallurgist of the Bridgeport Brass Company.

COPPER AND COPPER ALLOYS vs. SODIUM CHLORIDE SOLUTIONS (Cont.)

Effect of Dissolved Oxygen on Galvanic Corrosion

In the last issue of this column we showed that oxygen accelerated the corrosiveness of sodium chloride solutions towards copper and copper alloys.

Oxygen also plays an important part in the galvanic corrosion of ferrous materials and certain other metals coupled to copper and copper alloys in sodium chloride solutions.

In the presence of dissolved oxygen, galvanic corrosion of steel takes place with practically no corrosion of the copper or copper alloy to which it is electrically connected. If the area of the steel exposed to the sodium chloride solution is held constant and the area of the copper is increased, the rate of corrosion of the steel will be increased.

On the other hand, if the amount of dissolved oxygen is low or absent, increasing the area of the copper will have no effect. This behavior shows that in this type of a couple galvanic corrosion is controlled by the supply of oxygen. Hence, an increase of aeration or rate of change of solution on the copper surface, or temperature rise, usually accelerates the rate of corrosion of the steel.

Effect of Over-Voltage

When copper and copper alloys are coupled with such metals as aluminum or magnesium in sodium chloride solutions, the corrosion reaction results in the production and evolution of hydrogen. Here, instead of oxygen being the accelerator, the hydrogen over-voltage of the cathodic metal is the controlling factor as shown in the accompanying table.

Over-voltage is defined as the difference between the potential of a metal surface on which a reaction is actively taking place and another metal surface at equilibrium for the same reaction.

GALVANIC CORROSION OF MAGNESIUM IN 3% SODIUM CHLORIDE SOLUTION AT ROOM TEMPERATURE*

Metal coupled with Magnesium	Galvanic Current (Milliamperes)
Mercury	0.1
Zinc	4.5
Lead	13.0
Copper	19.0
Nickel	30.0
Iron	32.0
Aluminum	12 to 40
Platinum	67.0

It should be noted that the relative order based on the galvanic currents generated have no relationship to the positions of these metals in the Standard Electromotive Series and in the Galvanic Series in sea water. (See Copper Alloy Bulletin Nov., 1948.)

Here the galvanic currents are controlled entirely by the hydrogen over-voltage. Mercury, which has the highest over-voltage, showed the lowest galvanic current; and platinum, which has the lowest over-voltage, showed the highest galvanic current when coupled with magnesium.

---

*Reference: W. Kroenig and G. Kostyler, Z. Metallkunde 25, 144-145 (1933).

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

Portable Power Drive is built for fast, efficient operation of hand pipe threaders, cutters and reamers. Aluminum case cuts weight to 140 lbs., eases portability. Drive has three-jaw scroll chuck with six pinions. Steel-backed bronze bushings on spindle, spindle gear and drive pinion, need only occasional lubrication. Recessed switch is protected against bumps. **No. 1363**

Sine Adjustable Drill Guide is adaptable to either portable power tools or drill presses. It has depth drop adjustable to any depth from ¾ in. on hand tools to 1¼ in. on drill press. Pilot is designed to accept desired drill size without use of drill bushings in the jig plates. **No. 1364**

Grinding Vise, square within 0.00001 in. or less it is claimed, will take tapered and odd-shaped workpieces in its swivel jaw. Workable in four positions, vise has adjusting stop and down-holding features for accurate positioning. Round stock from 1/16 to 2½ in. diameter is held in V-block fashion. Vise is attachable to angle plates, V blocks and sine angle plate with 0.100 recess for small angles. Jaw range is 0 to 3 in. **No. 1365**

Permanent Magnet Chuck is low in height to make maximum use of clearance between tool and chuck. It is suitable, the maker claims, for light milling, planing, scraping, hand finishing, burring, polishing and shaping. Unit is portable and retains peak energy indefinitely. Holding power is varied from maximum to minimum by hand lever control. **No. 1366**

Tool and Drill Grinder has both rough and fine wheels, will take drills from No. 60 wire size through ¾ in. It permits grinding of point angles from 45 to 74 deg., clearance angles from 6 to 15 deg., and chisel point angles from 117 to 135 deg. Drill point edge gauge is attached for checking and tool bit fixture is available for grinding small lathe tools. **No. 1367**

Car Spotter with vertical capstan has either 5 or 7½ hp., 3-phase 60-cycle motor shielded for outdoor service with capacities of 100 and 150 gross tons. Starting line pull capacity ranges from 5000 to 7500 lbs., and normal line pull is from 3800 to 5000 lbs. at 45 ft. per minute. Units can be used for pulling and spotting cars, moving heavy equipment and handling furnace or kiln cars, etc. **No. 1368**

BRASS, BRONZE, COPPER, DURONZE, NICKEL SILVER, CUPRO NICKEL
BRIDGEPORT BRASS
BRASS Bridgeport CO.
BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. • ESTABLISHED 1865
Mills at Bridgeport, Connecticut, and Indianapolis, Indiana • In Canada: Noranda Copper and Brass Limited, Montreal
Warehouse Service with Slitting Facilities in Principal Cities
(Advertisement)

New Books

Welding Science Explained

WELDING ENGINEERING by Boniface E. Rossi; cloth, 786 pages, 6 x 9¼ inches; published by McGraw-Hill Book Co. Inc., New York, for $8.00; available from STEEL, Penton Bldg., Cleveland 13, O.

This volume is an account of the science of welding. As well as familiarizing the student or beginner with fundamental facts on welding, the book gives those in the field a wider understanding of the process and provides a source of reference for the draftsman, designer, engineer, researcher and executive. Treatment is technical and practical.

Section one covers various welding processes. Section two deals with metals, their metallurgy and visibility. Section three presents and discusses pertinent design and fabrication considerations. Section four treats the testing and inspection of welds.

Five appendices are included: Welding terms and their definitions, selected bibliography, visual aids, questions and problems, and engineering data and talks.

Guide to Better Design

STRESS CONCENTRATION DESIGN FACTORS by R. E. Peterson; cloth, 155 pages, 9½ x 11¼ inches; published by John Wiley & Sons Inc., New York, for $8.50; available from STEEL, Penton Bldg., Cleveland 13, O.

It is the purpose of this book to place in the designer's hands information which will enable him to improve his design calculations to the end that failure will be less prevalent and better-balanced designs will be achieved. The book is primarily a working tool. It is not intended to be a textbook in the usual sense, and therefore only enough background and references are given to enable the reader to explore the subject further if he so desires.

Measurement History Unfolded

SCIENCE OF PRECISION MEASUREMENT; cloth, 258 pages, 6 x 9¼ inches; published by DoAll Co., Des Plaines, Ill., for $3.50; available from STEEL, Penton Bldg., Cleveland 13, O.

An expanded edition, this textbook gives the fundamentals of precision inspection techniques for control of quality in product manufacturing. It unfolds a panorama of the measuring devices employed by man in his technological progress from ancient times.

The book discusses the wave length of light as the universal basis of present-day precision measurement, and its practical embodiment in the form of gage blocks.

Angle measurements, use of optical flats and interpretations of fringe lines, use of comparators, checking of micrometers, thread and gear measurements are also covered.

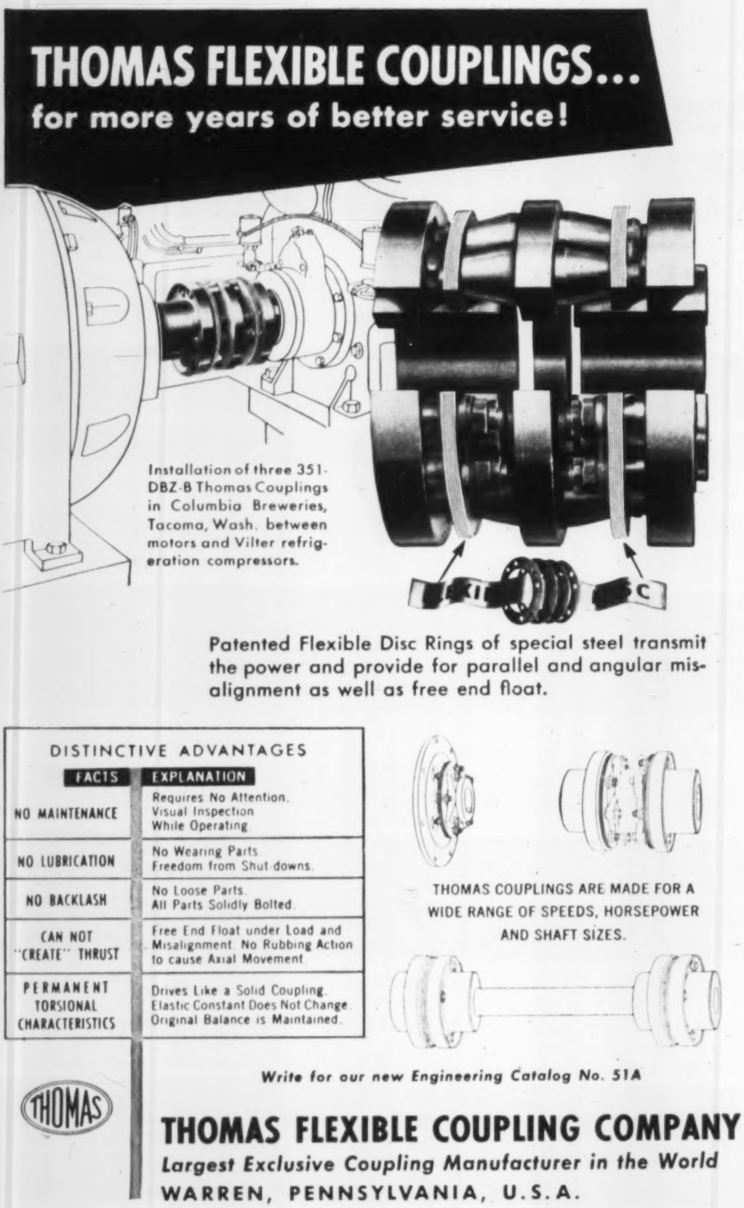
Materials Conference Report

MATERIALS FOR PRODUCT DEVELOPMENT—1953; cloth, 265 pages, 6 x 9¼ inches; published by Clapp & Poliak Inc., New York, for $7.50; available from STEEL, Penton Bldg., Cleveland 13, O.

This text contains the discussions at the first Basic Materials Conference held in New York in June, 1953, and deals with modern materials available for the production of goods.

Papers read at the conference ranged in scope from discussions of materials, such as radioactive materials, titanium and zirconium, to new applications of steel, ceramics and wood.

Eighteen papers are included, illustrated by 36 tables and 30 graphs.



THOMAS FLEXIBLE COUPLINGS...
for more years of better service!

Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES

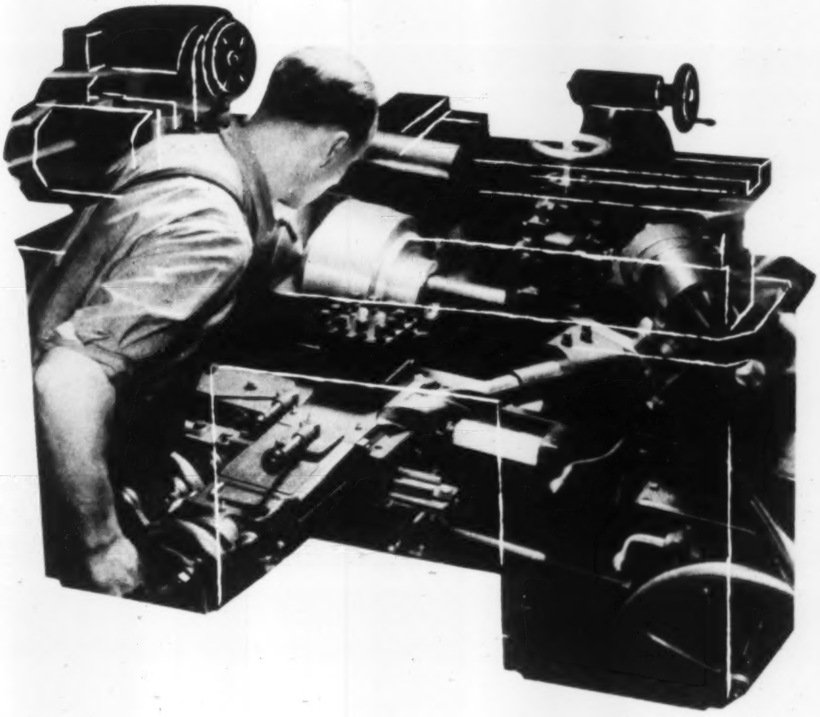
FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating
NO LUBRICATION	No Wearing Parts Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.

THOMAS COUPLINGS ARE MADE FOR A WIDE RANGE OF SPEEDS, HORSEPOWER AND SHAFT SIZES.

Write for our new Engineering Catalog No. 51A

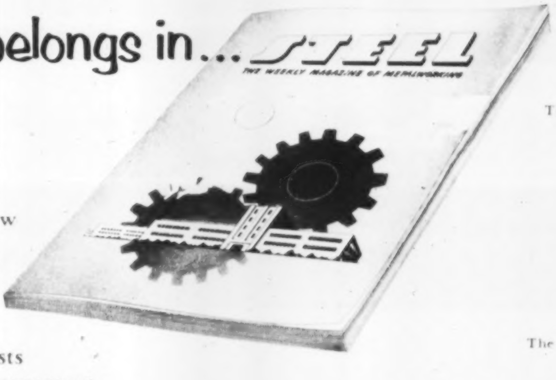
THOMAS

THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U.S.A.



If your product belongs in metalworking...

your advertising belongs in...



Machine tool advertisers know that the 17,000 metalworking plants reached by STEEL is their market. They know, too, that to sell the opportunity for increased productivity and reduced unit costs they must reach all 4—the management, production, engineering, and purchasing executives, who have a voice in the decision to invest X dollars in new machine tools. And that's why STEEL is the logical choice as the *basic paper* to reach the machine tool market.

STEEL • Penton Building • Cleveland 13, Ohio

You advertise in STEEL to reach all four buying influences

MANAGEMENT
PURCHASING
PRODUCTION
ENGINEERING

These 66 manufacturers of machine tools advertised in STEEL during 1952

Armstrong-Blum Manufacturing Co.
Baker Bros., Inc.
Baldwin Lima Hamilton Corp.,
Eddystone Div.
The Cyril Bath Co.
Brown & Sharpe Mfg. Co.,
Milling Machines
Bryant Chucking Grinder Co.
The Bullard Co.
The Cincinnati Gilbert Machine
Tool Co.
Cincinnati Grinders, Inc.,
Machine Tools Grinders, etc.
Cincinnati Milling Machine Co.
The Cincinnati Shaper Co.
Cleereman Machine Tool Co.
Cone Automatic Machine Co., Inc.
The Cross Co.
Delta Power Tool Div.,
Rockwell Mfg. Co.
DeVlieg Machine Co.
The Doall Co.
V & O Press Co.,
Div. of Emhart Mfg. Co.
Ex Cell O Corp.
Fray Machine Tool Co.
Gallmeyer & Livingston Co.
Gardner Machine Co.
Giddings & Lewis
Machine Tool Co.
Gisholt Machine Co.
Govro Nelson Co.
The Hamilton Tool Co.
Hannifin Corp., Machine Tools
The Hartford Special Machinery Co.
Heald Machine Co.
Herbert Machine Tool Co., Inc.
Industrial Plants Corp.
Jones & Lamson Machine Co.,
Machine Tools
Jones & Lamson Machine Co.,
Turret Lathe Div.
Kaukauna Machine Co.
Kearney & Trecker Corp.
Walker Turner Div.,
Kearney & Trecker Corp.
Landis Tool Co.
Landis Machine Co.
LaPointe Machine Tool Co.
The R. K. Le Blond Machine Tool Co.
K. O. Lee Co.
Logan Engineering Co.
Mattison Machine Works
Michigan Tool Co., Machine Gear Shaper
Micromatic Hone Corp.
Moline Tool Co.
Monarch Machine Tool Co.
The Morey Machinery Co.
Morris Machine Tool Co.
Motch & Merryweather Machinery Co.
National Acme Co.
National Machinery Co.
New Britain Gridley Machine Div.,
New Britain Machine Co.
Potter & Johnston Co.,
Sub. of Pratt & Whitney Div.
Norton Company
Sibley Machine & Foundry Corp.
Simmons Machine Tool Corp.
Smith & Mills Co.,
Bryant Machinery Engineering
Snyder Tool & Engineering Co.
South Bend Lathe Works
Springfield Machine Tool Co., The
American Broach & Machine Co.,
Div. Sundstrand Machine Tool
Turchan Follower Machine Co.
Van Norman Co.
Warner & Swasey Co.
Wells Manufacturing Corp.

Newport Steel SERVES CINCINNATI and a THOUSAND TOWNS BEYOND

This mill finds a ready market in the Queen City just across the Ohio River. Yet Newport serves many even larger territories throughout the expanding Midwest and South. Over rail and river and highway there flows a steady stream of coils and sheets, line pipe, roofing and siding, galvanized sheets, culverts, and all the other high-grade Newport products which customers over 68 years have come to prefer. New and modernized facilities, able management and experienced steelmakers, and nearness to America's fastest growing market for steel products, make Newport a most logical source of supply.

PRODUCTS OF NEWPORT STEEL

- Hot-Rolled Steel in Coil
- Hot-Rolled Pickled Steel in Coil
- Electric Weld Line Pipe
- Hot-Rolled Sheets
- Galvanized Sheets
- Galvannealed Sheets
- Colorbond Sheets
- Hot-Rolled Pickled Sheets
- Electrical Sheets
- Alloy Sheets
- Roofing and Siding
- Eave Trough and Conductor Pipe
- Culverts

ECONOMICAL WATERAIL DELIVERY

Newport Steel is situated on the Mississippi-Ohio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to industrial areas throughout the Middle West and South.

Newport Steel
CORPORATION
NEWPORT, KENTUCKY

STEEL

February 15, 1954

Market Outlook

THE steel buyers' dollar is bringing bigger returns these days.

Standard base prices of steel are remaining intact, but more and more price extras are being reduced or waived, freight absorption by mills is increasing, premium base prices are continuing to fade, and steel jobbers are making price concessions and offering free services to attract customers.

MORE FOR THE DOLLAR— Shortly after U. S. Steel Corp. announced a $4-a-ton reduction in the quality extra of rimmed steel a number of other producers signified they would follow suit. In the East, several rollers of narrow, cold-rolled carbon steel strip cut their premium base prices $2 to $4 a ton and three producers of steel plates wiped the premiums out of their prices and adopted standard base prices. Jobbers, in their bids for business, are seeking to compete with mills. The jobbers are absorbing freight and are performing some services free, for which mills charge extras. These efforts are paying off to jobbers, particularly in cases where consumers require quick delivery.

FOR QUICK SERVICE— Alert to the importance of making quick deliveries today, mills are building up certain stocks of finished steel so they can make immediate shipments and not miss out on any orders.

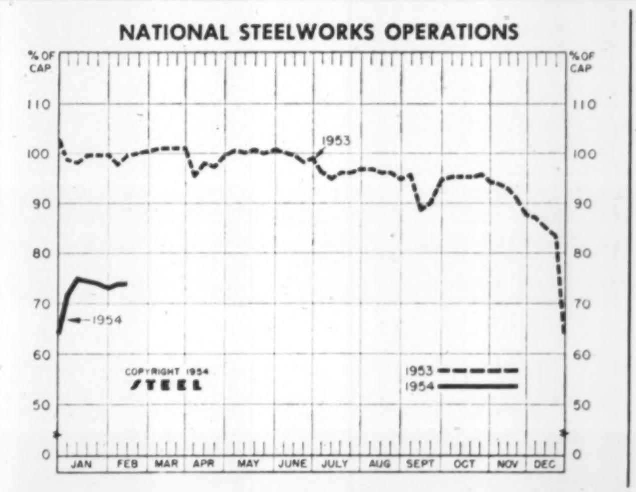
Despite the scattered reductions in prices, STEEL's price composite on finished steel remains at $113.91 a net ton. The changes were on prices which do not figure in the index.

On the other hand, STEEL's price composite on steelmaking grades of scrap declined for the third consecutive week. Latest decrease was 33 cents, making the composite $27.50 a ton.

COSTS DOWN— The declining price of scrap is helping mills make such price concessions as waiving or reduction of extras and absorption of freight on shipments of steel to users. A Pittsburgh steel producer pointed out that on open-hearth steel it is saving $3 a ton over late last summer. Since then, its cost of purchased scrap has dropped $12 a ton. The producer is beginning to use more than 50 per cent scrap in its open-hearth charges. Half of the scrap is from its own mill; the rest is purchased. Thus, around one-fourth of the metallic charge for each ton of steel is purchased scrap, and that fourth of a ton of scrap costs $3 less than it did.

STEADY— Production at the steel mills is holding steady, as a whole. In the week ended Feb. 14, output of steel for ingots and castings was unchanged from the preceding week, 74 per cent of capacity, and yielded 1,764,000 net tons. Although the national ingot rate remains steady, there are wide variations in the rate of operations from plant to plant. Some of the small steel plants are closed down, others are operating only a small part of their facilities, and yet others have most of their capacity in operation.

MORE FACILITIES— Although all of the country's steel facilities are not in use some new ones are coming into operation, the result of the vast expansion program under way in the steel industry in the last few years. In this first quarter, three new producers of seamless tubing will begin full production.



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Feb. 14	Change	Same Week 1953	Same Week 1952
Pittsburgh	86	0*	106	101.5
Chicago	82	— 2*	101	101.5
Mid-Atlantic	75	— 1	97	99
Youngstown	63	0	106	102
Wheeling	75	0	100.5	99
Cleveland	81	+ 1*	103	97.5
Buffalo	83	+ 2.5	106.5	104
Birmingham	76.5	— 4	97	104
New England	53	—12	85	88
Cincinnati	73.5	+ 7	93	90
St. Louis	35.5	— 1	93.5	77.5
Detroit	80.5	+ 1.5*	100.5	101.5
Western	71	— 9	109	104
National Rate	74	0	99.5	100

INGOT PRODUCTION‡

	Week Ended Feb. 14†	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	109.8	110.4	110.3	139.9
NET TONS (In thousands)	1,764	1,774	1,772	2,248

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,384,549 in 1954; 2,254,459 in 1953; 2,077,040 in 1952.

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Feb. 9

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.400
Rails, light, 40 lb	5.767
Tie Plates	5.125
Axles, railway	7.250
Wheels, freight car, 33 in. (per wheel)	47.000
Plates, carbon	4.550
Structural Shapes	4.282
Bars, tool steel, carbon (lb)	0.415
Bars, tool steel, alloy, oil hardening die (lb)	0.505
Bars, tool steel, H.R. alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.075
Bars, tool steel, H.R., alloy, high speed W 18, Cr 4, V 1 (lb)	1.550
Bars, H.R., alloy	$8.675
Bars, H.R., stainless, 303 (lb)	0.418
Bars, H.R., carbon	4.873
Bars, reinforcing	4.863
Bars, C.F., carbon	7.880
Bars, C.F., alloy	11.075
Bars, C.F., stainless, 302 (lb)	0.433
Sheets, H.R., carbon	4.765
Sheets, C.R., carbon	5.704
Sheets, galvanized	6.945
Sheets, C.R., stainless, 302 (lb)	0.548
Sheets, electrical	9.000
Strip, C.R., carbon	7.243
Strip, C.R., stainless, 430 (lb)	$0.415
Strip, H.R., carbon	4.975
Pipe, black, buttweld (100 ft)	14.454
Pipe, galv., buttweld (100 ft)	17.567
Pipe, line (100 ft)	141.960
Casing, oil well, carbon (100 ft)	149.516
Casing, oil well, alloy (100 ft)	214.113
Tubes, boiler (100 ft)	‡
Tubing, mechanical, carbon (100 ft)	‡
Tubing, mechanical, stainless, 304 (100 ft)	161.193
Tin plate, hot-dipped, 1.25 lb	$8.433
Tin plate, electrolytic, 0.25 lb	7.133
Black plate, can making quality	6.233
Wire, drawn, carbon	7.713
Wire, drawn, stainless, 430 (lb)	0.545
Bale ties (bundle)	5.653
Nails, wire, 8d common	7.488
Wire, barbed (80-rod spool)	6.799
Woven wire fence (20-rod roll)	16.065

‡Not available.

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Feb. 9 1954	Feb. 2 1954	Month Ago	Jan. Average
(1947-1949=100)	140.9	141.3	141.4	141.4

STEEL's FINISHED STEEL PRICE INDEX

	Feb. 11 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	189.74	189.74	189.74	181.31	151.86
Index in cents per lb	5.140	5.140	5.140	4.912	4.114

STEEL's ARITHMETICAL PRICE COMPOSITE*

	Feb. 11 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT	$113.91	$113.91	$113.91	$110.98	$97.77
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	55.04	46.69
Basic Pig Iron, GT	56.04	56.04	56.04	54.66	46.22
Malleable Pig Iron, GT	57.27	57.27	57.27	55.77	47.41
Steelmaking Scrap, GT	27.50	27.83	29.17	43.00	40.33

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

FINISHED STEEL	Feb. 11 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	4.15	4.15	3.95	3.45
Bars, H.R., Chicago	4.15	4.15	4.15	3.95	3.35
Bars, H.R., del. Philadelphia	5.302	5.302	5.302	4.502	3.816
Bars, C.F., Pittsburgh	5.20	5.20	5.20	4.925	3.95
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85	3.275
Shapes, Std., Chicago	4.10	4.10	4.10	3.85	3.25
Shapes, deld., Philadelphia	4.38	4.38	4.38	4.13	3.492
Plates, Pittsburgh	4.10	4.10	4.10	3.90	3.50
Plates, Chicago	4.10	4.10	4.10	3.90	3.40
Plates, Coatesville, Pa.	4.10	4.20	4.20	4.35	3.75
Plates, Sparrows Point, Md.	4.10	4.10	4.10	3.90	3.45
Plates, Claymont, Del.	4.10	4.20	4.20	4.35	3.95
Sheets, H.R., Pittsburgh	3.925	3.925	3.925	3.775	3.275
Sheets, H.R., Chicago	3.925	3.925	3.925	3.775	3.25
Sheets, C.R., Pittsburgh	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Chicago	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Detroit	4.975	4.975	4.975	4.775	4.20
Sheets, Galv., Pittsburgh	5.275	5.275	5.275	5.075	4.40
Strip, H.R., Pitts.	4.425	4.425	4.425	3.75-4.225	3.275
Strip, H.R., Chicago	3.925	3.925	3.925	3.725	3.25
Strip, C.R., Pittsburgh	5.45	5.45	5.45	5.10-5.80	4.375
Strip, C.R., Chicago	5.70	5.70	5.70	5.35	4.00
Strip, C.R., Detroit	5.45-6.05	5.45-6.05	5.45-6.05	5.30-6.05	4.20
Wire, Basic, Pitts.	5.525	5.525	5.525	5.475-5.225	4.325
Nails, Wire, Pittsburgh	6.55	6.55	6.55	6.35	5.775
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$6.70

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$75.50	$75.50	$75.50	$70.50	$61.00
Wire rods, 7/32-5/8", Pitts.	4.525	4.525	4.525	4.425	3.775

PIG IRON, Gross Ton

PIG IRON, Gross Ton	Feb. 11 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$55.50	$47.00
Basic, Valley	56.00	56.00	56.00	54.50	46.00
Basic, deld. Phila.	59.66	59.66	59.66	59.25	50.30
No. 2 Fdry, Pitts.	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	55.00	46.25
No. 2 Fdry, Valley	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, deld. Phila.	60.16	60.16	60.16	59.75	50.80
No. 2 Fdry, Birm.	52.88	52.88	52.88	51.38	43.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	58.93	49.43
Malleable, Valley	56.50	56.50	56.50	55.00	46.50
Malleable, Chicago	56.50	56.50	56.50	55.00	46.50
Ferromanganese, Duquesne	200.00†	200.00†	200.00†	228.00*	163.00*

*78-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$29.50	$29.50	$30.50	$44.00	$41.00
No. 1 Heavy Melt, E. Pa.	26.00	27.00	29.50	41.50	42.00
No. 1 Heavy Melt, Chicago	27.00	27.00	29.00	42.50	39.00
No. 1 Heavy Melt, Valley	27.50	28.50	29.50	44.00	37.75
No. 1 Heavy Melt, Cleve.	25.50	26.50	28.50	43.00	37.25
No. 1 Heavy Melt, Buffalo	25.00	25.00	27.50	43.00	44.00
Rails, Rerolling, Chicago	36.50	36.50	39.50	52.50	56.00
No. 1 Cast, Chicago	29.50	29.50	32.50	43.00	47.50

COKE, Net Ton

Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$14.50
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	17.00	17.00
Oven Fdry, Chicago	24.50	24.50	24.50	24.50	20.40

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99+%, ingots 21.50, pigs 20.00, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 23.30; No. 43, 5% Si, 23.10; No. 142, 4% Cu, 24.40; No. 195, 4.5% Cu, 0.8% Si, 23.70; No. 214, 3.8% Mg, 24.40; No. 356, 7% Si, 0.3% Mg, 23.20.

Antimony: R.M.M. brand, 99.5% 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 25.50-26.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb deld.

Cobalt: 97-99%, $2.60 per lb for 550 lb keg, $2.62 per lb for 100 lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 29.50-30.00 deld. Conn. Valley, 29.625-30.125 deld. Midwest; Lake 30.00 deld; Fire refined 29.75 deld.

Germanium: 99.9%, $295 per lb nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $165-$175 per troy oz.

Lead: Common 12.80, chemical 12.90, corroding 12.90, St. Louis, New York basis, add 0.20.

Lithium: 98%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8%, selfpalletizing pig 27.00; notched ingot 27.75, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., and Madison, Ill., add 1.20 for pig and 1.25 for ingot. Sticks, 1.3 in. diameter, 46.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more, f.o.b. Freeport, Tex., or Madison, Ill. Add 1.20 for Port Newark, N. J.

Mercury: Open market, spot, New York, $188-$191 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3.40 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

DAILY NONFERROUS PRICE RECORD

	Price Feb. 11	Change	Previous Price	Jan. Avg.	Dec. Avg.	Feb. 1953 Avg.
Copper	29.50-30.00	Oct. 20	29.00-30.00	29.750	29.750	25.136
Lead	12.80	Jan. 18	13.30	13.060	13.300	13.300
Zinc	9.50	Jan. 18	10.00	9.760	10.000	11.431
Tin	85.00	Feb. 11	84.875	85.100	84.913	121.500
Nickel	60.00	Jan. 14	56.50	60.000	60.000	60.000
Aluminum	21.50	July 15	20.50	21.500	21.500	20.500
Magnesium	27.00	Mar. 9	24.50	27.000	27.000	24.500

Quotations in cents per pound based on: Copper, deld. Conn. Valley; Lead, common grade, deld. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, deld. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99 + %, deld.; Magnesium 99.8%, Freeport, Tex.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots for addition to cast iron, 60.00; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $140-$150 per troy oz nom.

Palladium: $22-$24 per troy oz.

Platinum: $91-$93 per troy oz. from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $75-$80 per troy oz.

Selenium: 99.5%, $5-$6 per lb.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $39.00 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, New York, 85.00.

Titanium: Sponge, 99.3+%, $5 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $5.35 per lb f.o.b. shipping point; less than 1000 lb $5.50; 99+% hydrogen reduced, $5.85. Treated ingots $7.95.

Zinc: Prime western 9.50, brass special 9.75, intermediate 10.00, E. St. Louis, freight allowed over 0.50 per pound. High grade 10.85, special high grade 11.00, die casting alloy ingot 14.00, deld.

Zirconium: Sponge $14.00 per lb; powder 100 lb or more $7.00; less than 100 lb $8.00.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston Alloys 18.75-19.50; No. 12 foundry alloy (No. 2 grade) 18.25-19.00; 5% silicon alloy, 0.60 Cu max., 21.50-22.00; 13 alloy, 0.60 Cu max., 21.50-22.00; 195 alloy 20.50-21.00; 108 alloy 19.00-19.50; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 19.50-20.00; grade 2, 18.00-19.00; grade 3, 17.00-17.50; grade 4, 15.50-17.00.

Brass Ingot: Red brass, No. 115, 23.50; tin bronze No. 225, 34.25, No. 245, 28.50; high-leaded tin bronze, No. 305, 27.75; No. 1 yellow, No. 405, 19.75; manganese bronze No. 421, 24.25.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 31.50; AZ91C, 32.00; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l., 37.03. Magnet wire deld., 15,000 lb or more 41.83; l.c.l., 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $18.00 per cwt; pipe, full coils $18.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 100,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forging billets, $6; hot-rolled and forged bars, $6.

ZINC

Sheets 23.00, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50, f.o.b. mill, 36,000 lb and over. Plates 19.00-22.25.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R. ...	86.5	67.5	92.5
Strip, C.R. ...	92.5	70.5	98.5
Plate, H.R. ..	84.5	66.5	90.5
Rod, Shapes ..	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks ..	....	60.0	....

ALUMINUM

(30,000 lb base; freight allowed over 499 lb)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Inc.	Flat Sheet*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	12-48	33.9	...	...
0.135-0.096	12-48	34.4	...	...
0.095-0.077	12-48	35.1	32.7	37.5
0.076-0.061	12-48	35.7	32.9	37.7
0.060-0.048	12-48	36.1	33.2	38.1
0.047-0.038	12-48	36.6	33.6	38.4
0.037-0.030	12-48	37.0	34.0	39.1
0.029-0.024	12-48	37.6	34.3	39.6
0.023-0.019	12-36	38.3	35.1	40.4
0.018-0.017	12-36	39.1	35.7	41.3
0.016-0.015	12-36	40.0	36.5	42.5
0.014	12-24	41.0	37.5	43.8
0.013-0.012	12-24	42.1	38.2	44.8
0.011	12-24	43.1	39.4	46.4
0.010-0.0095	12-24	44.3	40.5	48.0
0.009-0.0085	12-24	45.6	41.9	50.0
0.008-0.0075	12-24	47.1	43.1	51.8
0.007	12-18	48.6	44.6	54.1
0.006	12-18	50.2	46.0	59.1

---

* 72-180 in. lengths. † 26 in. max. dia.

ALUMINUM

Plates and Circles: Thickness 0.250-3.0 in., 24-60 in. widths or dia., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
2S-F; 3S-F	32.4	36.3
50S-F	33.5	37.4
4S-F	34.5	39.1
52S-F	36.3	40.9
61S-T6	37.4	41.5
24S-T4*	39.3	45.4
75S-T6*	47.1	53.7

* 24-48 in. widths or dia., 72-180 in. lengths.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or across flats	Round 11S-T3	Round 17S-T4	Hexagonal 11S-T3	Hexagonal 17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.9	46.2	...	56.8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Forging Stock: Round, Class 1, 43.8-34.4, in specific lengths 36-144 in., diameters 0.375-8 in.; rectangles and squares, Class 1, 50.2-38.4 in random lengths 0.375-4.0 in. thick, widths 0.750-10.0 in.

Pipe: A.S.A. Schedule 40, alloy 63S-T6, 20 ft length, plain ends, 90,000 lb base, per 100 ft.

Nom. pipe size, in.		Nom. pipe size, in.	
¾	$15.05	2	$ 46.30
1	23.65	4	127.70
1¼	32.00	6	228.50
1½	38.25	8	343.80

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 108.00, 0.064-in. 81.00, 0.125-in. 71.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled, AZ31, 53.00, 20,000 lb or more 0.188-1.0 in. thick, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 69.00, 20,000 lb or more, ¼-in. thick, widths 24-48 in., lengths 60-144 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	45.38b	45.98c	....	48.44	26.000	26.000	25.250
Yellow Brass	41.72	34.50d	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.98	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	40.07	52.50	48.92	18.250	18.000	17.500
Commercial Bronze, 90%	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	55.34	59.43g	57.00	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%	66.58	67.08	67.08	68.33	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	70.11e	25.125	24.875	24.125
Manganese Bronze	49.43	43.62	54.06	....	18.250	18.000	17.500
Muntz Metal	43.96	39.77	....	....	18.625	18.375	17.875

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 2S clipping 11.00; low copper clippings 11.00; mixed clippings 9.00-10.00; old sheet 8.00-9.00; borings and turnings 5.50; pistons and struts 5.50; crankcases 8.00-9.00; industrial castings 8.00-9.00.

Copper and Brass: Heavy copper and wire, No. 1 22.00; No. 2 copper 20.00; light copper 18.00; No. 1 composition red brass 15.50-16.00; No. 1 composition turnings 14.75-15.25; mixed brass turnings 9.50-10.00; new brass clippings 15.50-16.00; No. 1 brass rod turnings 10.50-11.00; light brass 8.50-9.00; heavy yellow brass 11.00-11.50; new brass rod ends 13.00; auto radiators, unsweated, 11.00-11.50; cocks and faucets 13.00-13.50; brass pipe 14.50-15.00.

Lead: Heavy 9.50; battery plate 5.00-5.50; linotype and stereotype 12.00; electrotype 10.50; mixed babbitt 11.00-11.50.

Magnesium: Clippings 20.00-21.00; clean castings 19.00-20.00; iron castings, not over 10% removable Fe, 18.00-19.00.

Monel: Clippings 22.00-24.00; old sheet 20.00-22.00; turnings 14.00-16.00; rods 22.00-24.00.

Nickel: Sheets and clips 60.00-65.00; rolled anodes 60.00-65.00; turnings 40.00; rod ends 60.00-65.00.

Tin: No. 1 pewter 40.00-45.00; block tin pipe 65.00-67.00; No. 1 babbitt 37.00-38.00.

Zinc: Old zinc, 3.25; new die cast scrap, 3.00; old die cast scrap, 3.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clippings 13.50-14.00; 51S, 52S clippings 13.50-14.00; 14S, 17S, 24S clippings 12.00-12.50; mixed clippings 12.00-12.50; old sheet 10.50-11.00; old cast 10.50-11.00; clean old cable, free of steel 13.50-14.00; borings and turnings 10.50-11.50.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper, Brass: No. 1 copper 24.00; No. 2 copper 22.50; light copper 21.00; refinery brass (60% copper) per dry copper content 20.00; auto radiators, 13.75, nominal.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 24.00-24.50; No. 2 copper 22.50-23.00; light copper 21.00-21.50; No. 1 composition borings 17.00; No. 1 composition solids 17.50; heavy yellow brass solids 13.50; yellow brass turnings 12.50; radiators 13.50.

PLATING MATERIALS

(F.o.b. shipping points, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $1.75 per lb.

Copper: Flat-rolled 45.04, oval 44.54, 2000-5000 lb; electrodeposited 39.78, cast 42.04, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00

Tin: Bar or slab, less than 200 lb $1.035; 200-499 lb $1.02; 500-999 lb $1.015; 1000 lb or more $1.01

Zinc: Bar 18.50, bar or flat top 17.50, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb in 100 lb drums

Chromic Acid: Less than 2000 lb 29.00; over 2000 lb 28.75.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,000 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.626, 100 oz 78.50; 2500 oz and over 77.375.

Sodium Cyanide: Egg, under 1000 lb 19.80, 1000-19,900 lb 18.80, 20,000 lb and over 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb 67.2; 100-600 lb 53.2; 700-1900 lb 50.7; 2000-9900 lb 49; 10,000 lb or more 47.8.

Stannous Chloride (Anhydrous): Less than 50 lb $1.521; 50 lb $1.181; 100-300 lb $1.081; 400-900 lb $1.007; 100-1900 lb 98.3; 2000-4900 lb 94.6; 5000-19,000 lb 83.5; 20,000 lb and over 82.4.

Stannous Sulphate: Less than 50 lb $1.223; 50 lb 92.3; 100-1900 lb 90.3; 2000 lb and over 88.3.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

Nonferrous Metals

Plans for a third round of expansion in aluminum industry have withered away. Chances for revival look slight now that demand for the light metal has softened

CONTROVERSIAL third round of aluminum expansion, all but forgotten since the market softened, is hovering near death.

In poor health since its inception in late 1952, its diet has consisted chiefly of indecision and government procrastination. To date there is no concrete evidence it will come to life.

Others Operating—In contrast, previous expansion rounds have thrived. Just this month the last plant of the second round went into operation, and all facilities are expected to be at capacity by summer.

Impetus for a third round (set at 210,000 tons of new capacity) has languished as its immediate importance faded. Though the industry evidences long-ranged bullishness, it admits no one has to buy against a shortage today. As a fundamental fact there is now more than adequate capacity to provide for all present military and civilian requirements except for peak mobilization readiness. There's sufficient metal available to make normal stockpile additions, too.

Big Decision—A question defense planners must answer is whether it's wholesome to rely on the stockpile exclusively for military emergencies. Argument against it is that stockpiles are rigid; you don't get any more in them after the showdown comes. Theoretically ideal situation, say industry experts, would be similar to that in steel, where civilian markets are so large that when defense needs arise, the problem is only one of conversion rather than of net capacity shortage.

Military leaders have been instructed to review and squeeze water out of peak mobilization requirements, keeping in mind there's no holdup of deliveries at present. They'll report by May 15, when the third round will be subjected to another in the long series of reviews.

Harvey's Progress—One major difference between third-round producers and previous expansions is that new plants would be purely military capacity because there's no current civilian market for their additional output. Two of the prospective producers, Olin Industries and Wheland Co., can't justify tying up large amounts of their own money in these projects and want the government to contribute substantially.

Only Harvey Machine Co. has announced plans for construction (54,000 tons annually), though ground has yet to be broken at its proposed site, The Dalles, Oreg., and the company refuses comment on the present status of its project. A pressing problem for Harvey is electric power. Though not announced publicly, Bonneville Power Administration has just given the company assurance of an additional 20,000 kilowatts of firm power. Added to the 40,000 kilowatts previously granted, Harvey now has sufficient firm power to operate one potline, which translates into about 27,000 tons of primary aluminum a year.

Trouble in Congress — A major hurdle left is to get Congress to appropriate about $1 million necessary for substation and transmission line to feed Bonneville power into Harvey's plant.

Harvey has a DPA fast amortization certificate for the plant. It has not applied for a government loan, saying that private financing had been arranged, though details have never been revealed. Project, exclusive of alumina facilities Harvey may decide to build, represent an estimated expenditure in the neighborhood of $100 million. General Services Administration has an option to buy the entire aluminum output over a period of five years and guarantees to buy at market price any aluminum the company produces but cannot sell or use in its own operations.

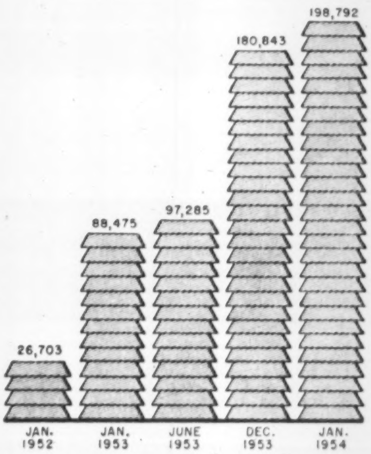
Slab Zinc Stocks Rise

Slab zinc stocks today are probably above the 200,000-ton mark for the first time since October, 1946. In January they climbed a surprising 18,172 tons to a month-end level of 198,792 tons (see accompanying chart) and brought a new wave of smelter cutbacks. Production during January, 78,561 tons, outran shipments of 54,785 tons by a wide margin, leaving backlog entering February of only 26,378 tons. Among companies planning further curtailment are St. Joseph Lead Co. (by 1500 tons monthly), National Zinc Co. (by 500 tons a month) and Athletic Mining & Smelting Co. (by 1500-2000 tons monthly). Offsetting this is resumption of full operations at Eagle-Picher's Henryetta, Okla., smelter. A committee of four senators from western mining states will meet with President Eisenhower Feb. 16 to discuss action to remedy lead and zinc's distress.

STILL CLIMBING

Slab Zinc Stocks at Smelters

(net tons at end of month)



Source: American Zinc Institute

Brass, Bronze Prices Down

Months of discount deals and price concessions were too much for brass and bronze ingot prices. These factors, plus dropping demand, brought across-the-board reductions in all grades of one cent a pound. There's still some undercutting of the new price, though advanced prices of scrap copper take the profitability out of it. Under new schedules No. 115 brings 23.50 cents, 215 is 33.00 cents, 315 is 25.50 and 405 is 19.75.

Import competition on free-cutting brass rods broke the U. S. price by 0.57 cent a pound last week. New base is 34.50 cents, which importers still undersell. Changes in quantity extras were also put in effect by some producers.

Nonferrous Briefs

- A further extension of two years on certain copper import taxes (until June 30, 1956) is called for by H. R. 7709, introduced by Daniel A. Reed (Rep., N. Y.) and referred to the House Ways & Means Committee.
- Zirconium oxide output is expected to more than double when Zirconium Corp. of America's new plant in Solon, O., gets into full operation later this year.

every grade of ZINC
for urgent military and
civilian requirements

SLAB ZINC

PRIME WESTERN
SELECT
BRASS SPECIAL
INTERMEDIATE
HIGH GRADE
SPECIAL HIGH GRADE

AMERICAN ZINC SALES COMPANY
Distributors for
AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on page 167. Key to footnotes, page 169.

—SEMIFINISHED—

INGOTS, Carbon Forging (NT)
Fontana,Calif. K1 ....$86.00
Munhall,Pa. U5 ......59.00

INGOTS, Alloy (NT)
Detroit R7 ....$63.00
Fontana, Calif. K1 ....88.00
Midland,Pa. C18 ......62.00
Munhall,Pa. U5 ......62.00

BILLETS, BLOOMS & SLABS
Carbon Rerolling (NT)
Aliquippa,Pa. J5 ....$62.00
Bessemer,Pa. U5 .....62.00
Clairton,Pa. U5 ......62.00
Ensley,Ala. T2 ....62.00
Fairfield,Ala. T2 .....62.00
Fontana,Calif. K1 ....70.00
Gary,Ind. U5 ....62.00
Johnstown,Pa. B2 ....62.00
Lackawanna,N.Y. B2..62.00
Munhall,Pa. U5 ......62.00
So.Chicago,Ill. U5 ....62.00
So.Duquesne,Pa. U5 ..62.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 ....$75.50
Bessemer,Pa. U5 ......75.50
Buffalo R2 ....75.50
Canton,O. R2 ....75.50
Clairton,Pa. U5 ......75.50
Cleveland R2 ....75.50
Conshohocken,Pa. A3..82.50
Detroit R7 ....78.50
Ensley,Ala. T2 ....75.50
Fairfield,Ala. T2 ......75.50
Fontana,Calif. K1 ....83.50
Gary,Ind. U5 ....75.50
Geneva,Utah C11 ......75.50
Houston S5 ....83.50
Johnstown,Pa. B2 ....75.50
Lackawanna, N.Y. B2..75.50
LosAngeles B3 ....94.50
Munhall,Pa. U5 ......75.50
Seattle B3 ....94.50
So.Chicago R2, U5, W14 75.50
So.Duquesne,Pa. U5 ..75.50
So.SanFrancisco B3 ..94.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$82.00
Buffalo R2 ....82.00
Canton,O. R2, T7 ....82.00
Conshohocken,Pa. A3 ..89.00
Detroit R7 ....84.00
Fontana,Calif. K1 ....101.00
Gary,Ind. U5 ....82.00
Houston S5 ....90.00
Ind.Harbor.Ind. Y1 ...82.00
Johnstown,Pa. B2 ....82.00
Lackawanna,N.Y. B2 ..82.00
LosAngeles B3 ......102.00
Massillon,O. R2 ......82.00
Midland,Pa. C18 ......82.00
Munhall,Pa. U5 ......82.00
So.Chicago R2,U5, W14 82.00
So.Duquesne,Pa. U5 ...82.00
Struthers,O. Y1 ....82.00
Warren,O. C17 ....82.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ....$92.50
Canton,O. R2 ....92.50
Cleveland R2 ....92.50
Fontana,Calif. K1 ... 113.50
Gary,Ind. U5 ....92.50
Massillon,O. R2 ......92.50
So.Chicago,Ill. R2 ....92.50
So.Duquesne,Pa. U5 ..92.50

SHEET BAR (NT)
Fontana,Calif. K1 ....$93.18

SKELP
Aliquippa,Pa. J5 ......3.85
Munhall,Pa. U5 ....3.75
Warren,O. R2 ....3.75
Youngstown R2, U5 ....3.75

WIRE RODS
AlabamaCity, Ala. R2..4.525
Aliquippa,Pa. J5 ......4.525
Alton,Ill. L1 ....4.70
Buffalo W12 ....4.525
Cleveland A7 ....4.525
Donora,Pa. A7 ....4.525
Fairfield,Ala. T2 ......4.525
Fontana,Calif. K1 ....5.325
Houston S5 ....4.925
Johnstown,Pa. B2 ....4.525
Joliet,Ill. A7 ....4.525
KansasCity,Mo. S5 ....4.865
LosAngeles B3 ....5.325
Minnequa,Colo. C10 ..4.775
Monessen,Pa. P7 ......4.725
No.Tonawanda,N.Y.B11 4.525
Pittsburg,Calif. C11 ...5.175
Portsmouth P12 ......4.525
Roebling,N.J. R5 ....4.625
So.Chicago,Ill. R2 ....4.525
SparrowsPoint,Md. B2..4.625
Sterling,Ill.(1) N15 ...4.525
Struthers,O. Y1 ......4.525
Torrance,Calif. C11 ...5.325
Worcester,Mass. A7 ...4.825

—STRUCTURALS—

Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..4.10
Aliquippa,Pa. J5 ....4.10
Bessemer,Ala T2 ......4.10
Bethlehem,Pa. B2 ......4.15
Clairton,Pa. U5 ....4.10
Fairfield,Ala. T2 ......4.10
Fontana,Calif. K1 ....4.75
Gary,Ind. U5 ....4.10
Geneva,Utah C11 ......4.10
Houston S5 ....4.50
Ind.Harbor,Ind. I-2 ...4.10
Johnstown,Pa. B2 ......4.15
KansasCity,Mo. S5 ....4.70
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 ....4.80
Minnequa,Colo. C10 ....4.55
Munhall,Pa. U5 ....4.10
Niles,Calif. P1 ....4.80
Phoenixville,Pa. P4 ....4.15
Seattle B3 ....4.85
So.Chicago,Ill. U5, W14.4.10
So.SanFrancisco B3 ....4.75
Torrance,Calif. C11 ....4.80
Weirton,W.Va. W6 ....4.35

Wide Flange
Bethlehem,Pa. B2 ......4.15
Clairton,Pa. U5 ....4.10
Fontana,Calif. K1 .....5.10
Lackawanna,N.Y. B2 ..4.15
Munhall,Pa. U5 ....4.10
Phoenixville,Pa. P4 ....4.95
So.Chicago,Ill. U5 ....4.10

Alloy Stand. Shapes
Clairton,Pa. U5 ....5.00
Fontana,Calif. K1 ......6.40
Gary,Ind. U5 ....5.00
Munhall,Pa. U5 ....5.00
So.Chicago,Ill. U5 ......5.00

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ......6.175
Bessemer,Ala. T2 ....6.175
Bethlehem,Pa. B2 ......6.20
Clairton,Pa. U5 ....6.175
Fairfield,Ala. T2 ......6.175
Fontana,Calif. K1 ....6.825
Gary,Ind. U5 ....6.175
Geneva,Utah C11 .....6.175
Ind.Harbor,Ind. I-2 ...6.175
Ind.Harbor,Ind. Y1 ...6.675
Johnstown,Pa. B2 .... 6.20
Lackawanna,N.Y. B2 ..6.20
LosAngeles B3 ....6.85
Munhall,Pa. U5 ......6.175
Seattle B3 ....6.90
So.Chicago,Ill. U5, W14 6.175
So.SanFrancisco B3 ....6.80
Struthers,O. Y1 ....6.675

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ......6.20
Lackawanna,N.Y. B2 ..6.20
Munhall,Pa. U5 ......6.125
So.Chicago,Ill. U5 ....6.125

BEARING PILES
Munhall,Pa. U5 ....4.10
So.Chicago,Ill. U5 ....4.10

—PILING—

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....4.925
Lackawanna,N.Y. B2 ..4.925
Munhall,Pa. U5 ......4.925
So.Chicago,Ill. U5 ....4.925

—PLATES—

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..4.10
Aliquippa,Pa. J5 ......4.10
Ashland,Ky. (15) A10..4.10
Bessemer,Ala. T2 ......4.10
Clairton,Pa. U5 ....4.10
Claymont,Del. C22 4.10
Cleveland J5, R2 ......4.10
Coatesville,Pa. L7 4.10
Conshohocken,Pa. A3 4.10
Ecorse,Mich. G5 ......4.30
Fairfield,Ala. T2 ......4.10
Fontana,Calif.(30) K1 ..4.75
Gary,Ind. U5 ....4.10
Geneva,Utah C11 ......4.10
GraniteCity,Ill. G4 ....4.30
Harrisburg,Pa. C5 .... 4.10
Houston S5 ....4.50
Ind.Harbor,Ind. I-2, Y1.4.10
Johnstown,Pa. B2 ......4.10
Lackawanna,N.Y. B2 ..4.10
LoneStar,Tex. L6 ......4.50
Minnequa,Colo. C10 ....4.95
Munhall,Pa. U5 ....4.10
Pittsburgh J5 ....4.10
Riverdale,Ill. A1 ......4.10
Seattle B3 ....5.00
Sharon,Pa. S3 ....4.10
So.Chicago,Ill. U5, W14.4.10
SparrowsPoint,Md. B2 ..4.10
Steubenville,O. W10 ....4.10
Warren,O. R2 ....4.10
Weirton,W.Va. W6 ....4.10
Youngstown R2, U5, Y1.4.10

PLATES, Carbon Abras. Resist.
Fontana,Calif. K1 .....5.90
Geneva,Utah C11 ......5.25

PLATES, Wrought Iron
Economy,Pa. B14 ......9.30

PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 ......6.25
Bessemer,Ala. T2 ......6.25
Clairton,Pa. U5 ....6.25
Cleveland J5 ....6.25
Conshohocken,Pa. A3 ..6.25
Ecorse,Mich. G5 ......6.45
Fairfield,Ala. T2 ....6.25
Fontana,Calif. (30) K1..6.95
Gary,Ind. U5 ....6.25
Geneva,Utah C11 ......6.25
Ind.Harbor.Ind. I-2 ....6.25
Ind.Harbor.Ind. Y1 ....6.75
Johnstown,Pa. B2 ......6.25
Lackawanna,N.Y. B2 ..6.25
Munhall,Pa. U5 ....6.25
Pittsburgh J5 ....6.25
Seattle B3 ....7.15
Sharon.Pa. S3 ....6.25
So.Chicago,Ill. U5, W14 6.25
SparrowsPoint,Md. B2 ..6.25
Youngstown U5 ....6.25
Youngstown Y1 ....6.75

PLATES, Alloy
Claymont,Del. C22 ....5.55
Coatesville,Pa. L7 ....5.55
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 ....5.55
Johnstown,Pa. B2 .....5.55
Munhall,Pa. U5 ....5.55
Sharon,Pa. S3 ....5.55
So.Chicago, Ill. U5, W14.5.55
SparrowsPoint,Md. B2 ..5.55

FLOOR PLATES
Cleveland J5 ....5.15
Conshohocken,Pa. A3 ..5.15
Harrisburg,Pa. C5 ....5.15
Ind.Harbor,Ind. I-2 ....5.15
Munhall,Pa. U5 ....5.15
So.Chicago,Ill U5 ....5.15

PLATES, Ingot Iron
Ashland c.l. (15) A10 ..4.35
Ashland,l.c.l.(15) A10 ..4.85
Cleveland, c.l. R2 ......4.70
Warren,O. c.l. R2 ......4.70

—BARS—

BARS, Hot-Rolled Carbon
Aliquippa,Pa. J5 ......4.15
Alton,Ill. L1 ....4.35
Atlanta,Ga. A11 ......4.40
Bessemer,Ala. T2 ......4.15
Buffalo(31) R2 ....4.18
Clairton,Pa. U5 ....4.15
Cleveland(31) R2 ......4.21
Detroit R7 ....4.30
Ecorse,Mich. G5 ....4.35
Emeryville,Calif. J7 ....4.90
Fairfield,Ala T2 ......4.15
Fairless,Pa. U5 ....4.30
Fontana,Calif. K1 ....4.85
Gary,Ind. U5 ....4.15
Gadsden,Ala.(31) R2 ..4.18
Houston S5 ....4.55
Ind.Harbor,Ind. I-2, Y1.4.15
Johnstown,Pa. B2 ......4.15
KansasCity,Mo. S5 ....4.75
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 ....4.85
Milton,Pa. M18 ....4.15
Minnequa,Colo. C10 ....4.60
Niles,Calif. P1 ....4.85
N.Tonawanda,N.Y. B11.4.15
Pittsburg,Calif. C11 ...4.85
Pittsburgh J5 ....4.15
Portland,Oreg. O4 ......4.90
Seattle B3, N14 ....4.90
So.Chicago U5, W14 ....4.15
Chicago(31) R2 ......4.22
So.Duquesne,Pa. U5 ....4.15
So.SanFran., Calif. B3 ..4.90
Sterling,Ill.(1) N15 ....4.15
Struthers,O. Y1 ....4.15
Torrance,Calif. C11 ....4.85
Weirton,W.Va. W6 ....4.15
Youngstown U5 ....4.15
Youngstown(31) R2 ....4.20

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....4.875
Buffalo R2 ....4.875
Canton,O. R2, T7 ....4.875
Clairton,Pa. U5 ......4.875
Detroit R7 ....4.975
Ecorse,Mich. G5 .....5.075
Fairless,Pa. U5 ......5.025
Fontana,Calif. K1 ....5.925
Gary,Ind. U5 ....4.875
Houston S5 ....5.275
Ind.Harbor,Ind. I-2, Y1 4.875
Johnstown,Pa. B2 ....4.875
KansasCity,Mo. S5 ..5.475
Lackawanna,N.Y. B2 ..4.875
LosAngeles B3 ....5.925
Massillon,O. R2 ......4.875
Midland,Pa. C18 ......4.875
So.Chicago R2, U5,W14 4.875
So.Duquesne,Pa. U5 ..4.875
Struthers,O. Y1 ....4.875
Warren,O. C17 ....4.875
Youngstown U5 ......4.875

BARS & SMALL SHAPES, H.R.
High-Strength Low-Alloy
Aliquippa,Pa. J5 ......6.225
Bessemer,Ala T2 ....6.225
Bethlehem,Pa. B2 ....6.225
Clairton,Pa. U5 ......6.225
Ecorse,Mich. G5 .....6.425
Fairfield,Ala. T2 ......6.225
Fontana,Calif. K1 ....7.475
Gary,Ind. U5 ....6.225
Ind.Harb.,Ind. Y1 ....6.725
Ind.Harb., Ind. I-2 ....6.225
Johnstown,Pa. B2 ....6.225
Lackawanna,N.Y. B2..6.225
LosAngeles B3 ....6.925
Pittsburgh J5 ....6.225
Seattle B3 ....6.975
So.Chicago W14 ......6.225
So.Duquesne,Pa. U5 ..6.225
So.SanFrancisco B3 ..6.975
Struthers,O. Y1 ......6.725
Youngstown U5 ......6.225

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....4.35

BAR SIZE ANGLES: S. Shapes
Aliquippa,Pa. J5 ......4.15
Atlanta A11 ....4.40
Niles,Calif. P1 ....4.85
SanFrancisco S7 ......5.10

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 ....5.00
Fontana,Calif. K1 ......6.00
Gary,Ind. U5 ....5.00
Houston S5 ....5.60
KansasCity S5 ....5.60
Youngstown U5 ....5.00

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....5.20
BeaverFalls,Pa. M12, R2 5.20
Buffalo B5 ....5.25
Camden,N.J. P13 ......5.65
Carnegie,Pa. C12 .....5.20
Chicago W18 ....5.20
Cleveland A7, C20 .....5.20
Detroit P17, R7 ....5.35
Detroit B5 ....5.40
Donora,Pa. A7 ....5.20
Elyria,O. W8 ....5.20
FranklinPark,Ill. N5 ...5.20
Gary,Ind. R2 ....5.20
GreenBay,Wis. F7 .....5.20
Hammond,Ind. L2, M13 5.20
Hartford,Conn. R2 .....5.75
Harvey, Ill. B5 ....5.20
LosAngeles R2 ....6.65
Mansfield,Mass. B5 .....5.75
Massillon,O. R2, R8 ...5.20
Monaca,Pa. S17 ....5.20
Newark,N.J. W18 ......5.65
NewCastle,Pa. (17) B4..5.20
Pittsburgh J5 ....5.20
Plymouth,Mich. P5 .....5.45
Putnam,Conn. W18 .....5.75
Readville,Mass. C14 ....5.75
St.Louis,Mo. M5 ....5.50
So.Chicago,Ill. W14 ....5.20
SpringCity,Pa. K3 .....5.65
Struthers,O. Y1 ....5.20
Waukegan,Ill. A7 ......5.20
Worcester,Mass. W19 ..6.10
Youngstown F3, Y1 ....5.20

BARS, Cold-Finished Alloy
(Turned and Ground)
Cumberland,Md. (5) C19 4.45

BARS, Cold-Finishing Alloy
Ambridge,Pa. W18 ....6.325
BeaverFalls,Pa. M12 ..6.325
Bethlehem,Pa. B2 ....6.325
Buffalo B5 ....6.325
Camden,N.J. P13 ......6.50
Canton,O. R2, T7 .....6.325
Carnegie, Pa. C12 .....6.325
Chicago W18 ....6.325
Cleveland A7, C20 ....6.325
Detroit R7 ....6.425
Detroit P17 ....6.475
Detroit B5 ....6.525
Donora,Pa. A7 ....6.325
Elyria,O. W8 ....6.325
Gary,Ind. R2 ....6.325
Hammond,Ind. L2, M13.6.325
Hartford,Conn. R2 ....6.775
Harvey,Ill. B5 ....6.325
Lackawanna,N.Y. B2 ..6.325
Mansfield,Mass. B5 ...6.775
Massillon,O. R2, R8 ...6.325
Midland,Pa. C18 ......6.325
Monaca,Pa. S17 ......6.325
Newark,N.J. W18 ......6.65
Plymouth,Mich. P5 ....6.525
So.Chicago,Ill. R2, W14.6.325
SpringCity,Pa. K3 ......6.50
Struthers,O. Y1 ....6.325
Warren,O. C17 ....6.325
Waukegan,Ill. A7 .....6.325
Worcester,Mass. A7 ...6.625
Youngstown F3, Y1 ...6.325

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..4.15
Atlanta A11 ....4.40
Buffalo R2 ....4.15
Cleveland R2 ....4.15
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 ......4.15
Fairless,Pa. U5 ....4.30
Fontana,Calif. K1 .....4.85
Gary,Ind. U5 ....4.15
Houston S5 ....4.55
Ind.Harbor,Ind. I-2, Y1.4.15
Johnstown,Pa. B2 ......4.15
KansasCity,Mo. S5 ....4.75
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 ....4.85
Milton,Pa. M18 ....4.15
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 ....4.85
Pittsburg,Calif. C11 ....4.85
Pittsburgh J5 ....4.15
SandSprings,Okla. S5 ..5.00
Seattle B3, N14 ....4.90
So.Chicago,Ill. R2 ......4.15
So.Duquesne,Pa. U5 ....4.15
So.SanFrancisco B3 ....4.90
SparrowsPoint,Md. B2 ..4.15
Sterling, Ill. (1) N15 ...4.15
Struthers,O., Y1 ....4.15
Torrance,Calif. C11 ....4.85
Youngstown R2, U5 ....4.15

BARS, Reinforcing
(Fabricated; to consumers)
Johnstown, ¼-1" B2 ...5.55
KansasCity S5 ....6.35
LosAngeles B3 ....5.80
Marion,O. P11 ....5.55
Seattle N14 ....5.80
Seattle B3 ....5.85
So.SanFrancisco B3 ....5.85
SparrowsPt. ¼-1" B2 ..5.55
Williamsport,Pa. S19 ..5.45

RAIL STEEL BARS
Avis,Pa.(4) J8 ....4.25
ChicagoHts.(3) C2, I-2 4.05
ChicagoHts.(4) C2, I-2 4.15
FortWorth,Tex.(26) T4..4.65
Franklin,Pa.(3) F5 4.05
Franklin,Pa.(4) F5 4.15
Marion,O.(3) P11 ......4.15
Moline,Ill.(3) R2 ......4.15
Tonawanda(3,4) B12 4.15
Williamsport,Pa.(3) S19 4.50
Williamsport,Pa.(4) S19 5.45

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 10.40
Economy,Pa.(D.R.)B14 12.90
Economy(Staybolt) B14 13.20
McK.Rks.(S.R.) L5 ...10.40
McK.Rks.(D.R.) L5 ...14.00
McK.Rks.(Staybolt) L5.15.50

—SHEETS—

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.925
Allenport,Pa. P7 .....3.925
Ashland,Ky.(8) A10 ..3.925
Cleveland J5, R2 .....3.925
Conshohocken,Pa. A3 ..4.05
Detroit M1 ....4.15
Ecorse,Mich. G5 ......4.125
Fairfield,Ala. T2 ......3.925
Fairless,Pa. U5 ....4.025
Fontana,Calif. K1 ......4.70
Gary,Ind. U5 ....3.925
Geneva,Utah C11 .....4.025
GraniteCity,Ill. G4 ....4.125
Ind.Harbor,Ind. I-2, Y1 3.925
Irvin,Pa. U5 ....3.925
Kokomo,Ind. C16 .....4.025
Lackawanna,N.Y. B2 ..3.925

Munhall,Pa. U5	3.925
Newport,Ky. N9	3.925
Niles,O. N12	5.175
Pittsburg,Calif. C11	4.625
Pittsburgh J5	3.925
Portsmouth,O. P12	3.925
Riverdale,Ill. A1	3.925
Sharon,Pa. S3	3.925
So.Chicago,Ill. W14	3.925
SparrowsPoint,Md. B2	3.925
Steubenville,O. W10	3.925
Torrance,Calif. C11	4.625
Warren,O. R2	3.925
Weirton,W.Va. W6	3.925
Youngstown U5, Y1	3.925

SHEETS, H.R. (19 gage)

AlabamaCity, Ala. R2	5.225
Dover,O. R1	5.05
Kokomo,Ind. C16	5.025
Mansfield,O. E6	5.05
Niles,O. N12	4.775
Torrance,Calif. C11	5.875

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy

Cleveland J5, R2	5.90
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.10
Fairfield,Ala. T2	5.90
Fontana,Calif. K1	6.675
Gary,Ind. U5	5.90
Ind.Harbor,Ind. I-2	5.90
Ind.Harbor,Ind. Y1	6.40
Irvin,Pa. U5	5.90
Lackawanna(35) B2	5.90
Munhall,Pa. U5	5.90
Pittsburgh J5	5.90
Sharon,Pa. S3	5.90
So.Chicago,Ill. U5	5.90
SparrowsPoint(36) B2	5.90
Warren,O. R2	5.90
Weirton,W.Va. W6	5.90
Youngstown U5	5.90
Youngstown Y1	6.40

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10	4.175
Cleveland R2	4.525
Ind.Harbor,Ind. I-2	4.175
Warren,O. R2	4.525

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7	4.775
Cleveland J5, R2	4.775
Ecorse,Mich. G5	4.975
Fairfield,Ala. T2	4.775
Fairless, Pa. U5	4.875
Follansbee,W.Va. F4	4.775
Fontana,Calif. K1	5.875
Gary,Ind. U5	4.775
GraniteCity,Ill. G4	4.975
Ind.Harbor,Ind. I-2, Y1	4.775
Irvin,Pa. U5	4.775
Lackawanna,N.Y. B2	4.775
Middletown,O. A10	4.775
Pittsburg,Calif. C11	5.725
Pittsburgh J5	4.775
Portsmouth,O. P12	4.775
SparrowsPoint,Md. B2	4.775
Steubenville,O. W10	4.775
Warren,O. R2	4.775
Weirton,W.Va. W6	4.775
Youngstown Y1	4.775

SHEETS, Cold-Rolled High-Strength Low Alloy

Cleveland J5, R2	7.225
Ecorse,Mich. G5	7.425
Fontana,Calif. K1	8.275
Gary,Ind. U5	7.225
IndianaHarbor,Ind. Y1	7.725
Irvin,Pa. U5	7.225
Lackawanna(37) B2	7.225
Pittsburgh J5	7.225
SparrowsPoint (38) B2	7.225
Warren,O. R2	7.225
Weirton,W.Va. W6	7.225
Youngstown Y1	7.725

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	5.375
Middletown,O. A10	5.275
Warren,O. R2	5.375

SHEETS, Gal'd No. 10 Steel

AlabamaCity,Ala. R2	5.275
Ashland,Ky.(8) A10	5.275
Canton,O. R2	5.275
Delphos,O. N16	5.775
Dover,O. R1	5.275
Fairfield,Ala. T2	5.275†
Gary,Ind. U5	5.275†
GraniteCity,Ill. G4	5.475
Ind.Harbor,Ind. I-2	5.325
Irvin,Pa. U5	5.275†
Kokomo,Ind. C16	5.375†
MartinsFerry,O. W10	5.275
Niles,O. N12	5.275
Pittsburg,Calif. C11	6.025†
SparrowsPoint,Md. B2	5.275
Steubenville,O. W10	5.275
Torrance,Calif. C11	6.275†
Weirton,W.Va. W6	5.275

†Based on 5c zinc.

SHEETS, Galvanized No. 10 High-Strength Low-Alloy

Irvin,Pa. U5	7.925
SparrowsPoint(39) B2	8.075

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.525
Canton,O. R2	6.025

SHEETS, Culvert

	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.325	....
Canton,O. R2	6.475	6.925
Fairfield T2	6.075	6.325
Gary,Ind. U5	6.075	6.325
Ind.Harbor I-2	6.075	6.325
Irvin,Pa. U5	6.075	6.325
Kokomo,Ind. C16	6.175	....
MartinsFry.,O W10	6.075	...
Pitts.,Cal. C11	6.825	....
SparrowsPt. B2	6.075	....
Torrance,Cal. C11	7.075	....

SHEETS, Culvert

	Pure Iron
Ashland,Ky. A10	6.575
Fairfield,Ala. T2	6.325
MartinsFerry,O. W10	6.325

SHEETS, Galvannealed Steel

Canton,O. R2	5.825
Irvin,Pa. U5	5.825†
Kokomo,Ind. C16	5.925†
Niles,O. N12	5.825

†Based on 5c zinc

SHEETS, ZINCGRIP Steel

Butler,Pa. A10	5.525
Middletown,O. A10	5.525

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.775
Middletown,O. A10	5.775

SHEETS, Electrogalvanized

Cleveland R2 (28)	6.125
Niles,O. R2 (28)	6.125
Weirton,W.Va. W6	5.975

SHEETS, ALUMINIZED

Butler,Pa. A10	8.625

SHEETS, Enameling Iron

Ashland Ky.(8) A10	5.175
Cleveland R2	5.175
Gary,Ind U5	5.175
GraniteCity,Ill. G4	*5.375*
Ind.Harbor,Ind. I-2	5.175
Irvin,Pa. U5	5.175
Middletown,O. A10	5.175
Niles,O. N12	6.525
Youngstown Y1	5.175

BLUED STOCK, 29 ga.

Follansbee,W.Va. F4	7.30
Follansbee(23) F4	7.175
Yorkville,O. W10	7.20

SHEETS, Long Terne Steel (Commercial Quality)

BeechBott'm,W.Va.W10	5.675
Gary,Ind. U5	5.675
Mansfield,O. E6	5.675
Middletown,O. A10	5.675
Niles,O. N12	5.675
Weirton,W.Va. W6	5.675

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	6.075

SHEETS, Well Casing

Fontana,Calif. K1	6.20

—STRIP—

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.925
Allenport,Pa. P7	3.925
Alton,Ill. L1	4.10
Ashland,Ky.(8) A10	3.925
Atlanta A11	4.175
Bessemer,Ala. T2	3.925
Bridgeport,Conn.(10) S15	*3.95*
Buffalo(27) R2	3.925
Carnegie,Pa. S18	4.425
Conshohocken,Pa. A3	4.05
Detroit M1	4.15
Ecorse,Mich. G5	4.125
Fairfield,Ala. T2	3.925
Fontana,Calif. K1	4.70
Gary,Ind. U5	3.925
Houston,Tex. S5	4.325
Ind.Harbor,Ind. I-2, Y1	3.925
Johnstown,Pa.(25) B2	3.925
KansasCity,Mo.(9) S5	4.525
Lackw'na,N.Y.(25) B2	3.925
LosAngeles(25) B3	4.675
Milton,Pa. M18	3.925
Minnequa,Colo. C10	5.025
NewBritain(10) S15	4.15
N.Tonawanda,N.Y. B11	3.925
Pittsburg,Calif. C11	4.675
Portsmouth,O. P12	3.925
Riverdale,Ill. A1	3.925
SanFrancisco S7	5.10
Seattle(25) B3	4.925
Seattle N14	4.925
Sharon,Pa. S3	3.925
So.Chicago,Ill. W14	3.925
So.SanFrancisco(25)B3	4.675
SparrowsPoint,Md. B2	3.925
Torrance,Calif. C11	4.675
Warren,O. R2	3.925
Weirton,W.Va. W6	3.925
Youngstown U5	3.925

STRIP, Hot-Rolled Alloy

Bridgeport,Conn(10)S15	6.45
Carnegie,Pa. S18	6.40
Fontana,Calif. K1	7.80
Gary,Ind. U5	6.40
Houston,Tex. S5	6.80
KansasCity,Mo. S5	7.00
LosAngeles B3	7.60
NewBritn.,Conn.(10)S15	6.45
Sharon,Pa. S3	6.40
So.Chicago W14	6.40
Youngstown U5	6.40

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.95
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.15
Fairfield,Ala. T2	5.95
Fontana,Calif. K1	7.05
Gary,Ind. U5	5.95
Ind.Harbor,Ind. I-2	5.95
Ind.Harbor,Ind. Y1	6.45
Lackawanna,N.Y. B2	6.00
LosAngeles(25) B3	6.70
Seattle(25) B3	6.95
Sharon,Pa. S3	5.95
So.SanFrancisco(25) B3	6.70
SparrowsPoint,Md. B2	6.00
Warren,O. R2	5.95
Weirton,W.Va. W6	5.95
Youngstown Y1	6.45
Youngstown U5	5.95

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	4.175
Warren,O. R2	4.525

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	5.45
Bridgeprt,Conn.(10) S15	*5.45*
Cleveland A7, J5	5.45
Dearborn,Mich. D3	5.65
Detroit D2, M1, P20	5.65
Dover,O. G6	5.45
Ecorse,Mich. G5	5.65
Follansbee,W.Va. F4	5.45
Fontana,Calif. K1	7.35
FranklinPark,Ill. T6	5.70
Ind.Harbor,Ind. I-2	5.70
Lackawanna,N.Y. B2	5.45
LosAngeles C1	7.50
Mattapan,Mass. T6	*6.10*
Middletown,O. A10	5.45
NewBedford,Mass. R10	6.00
NewBritain(10) S15	5.75
NewCastle,Pa. B4, E5	5.45
NewHaven,Conn. A7	6.20
NewHaven,Conn. D2	5.90
Pawtucket,R.I. N8, R3	6.30
Pittsburgh J5	5.45
Riverdale,Ill. A1	5.70
Rome,N.Y.(29) R6	5.45
Sharon,Pa. S3	5.45
SparrowsPoint,Md. B2	5.45
Trenton,N.J. R5	7.00
Wall'ford,Conn. W2	5.90
Warren,O.(40) T5	5.45
Warren,O. B9, R2	5.45
Weirton,W.Va. W6	5.45
Worcester,Mass. W19	7.05
Worcester,Mass. A7	6.30
Youngstown C8	5.95
Youngstown Y1	5.45

STRIP, Cold-Rolled Alloy Steel

Carnegie,Pa. S18	12.00
Cleveland A7	12.00
Dover,O. G6	12.00
Fontana,Calif. K1	13.65
Harrison,N.J. C18	12.00
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	12.30
Youngstown C8	12.00

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	7.80
Cleveland A7	8.15
Dearborn,Mich. D3	7.90
Dover,O. G6	8.00
Ecorse,Mich. G5	8.35
Lackawanna,N.Y. B2	8.15
Pittsburgh J5	7.80
Sharon,Pa. S3	7.65
SparrowsPoint,Md. B2	8.15
Warren,O. R2	7.80
Weirton,W.Va. W6	8.15
Youngstown Y1	8.30

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	6.05

STRIP, Electrogalvanized

Dover,O. G6	5.45
Warren,O. B9, T5	5.45
Weirton,W.Va. W6	5.45
Youngstown C8	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.65
Riverdale,Ill. A1	4.50
Sharon,Pa. S3	4.35
Youngstown U5	4.35

Key to Producers

A1	Acme Steel Co.
A3	Alan Wood Steel Co.
A4	Allegheny Ludlum Steel
A5	Alloy Metal Wire Co.
A7	American Steel & Wire
A8	**Anchor Drawn Steel Co.**
A9	Angell Nail & Chaplet
A10	Armco Steel Corp.
A11	Atlantic Steel Co.
A13	American CladmetalsCo.
B1	Babcock & Wilcox Co.
B2	Bethlehem Steel Co.
B3	Beth. Pac. Coast Steel
B4	Blair Strip Steel Co.
B5	Bliss & Laughlin Inc.
B8	Braeburn Alloy Steel
B9	Brainard Steel Div., Sharon Steel Corp.
B10	E. & G. Brooke, Wickwire Spencer Div., Colo. Fuel & Iron
B11	Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12	Buffalo Steel Div. H. K. Porter Co.
B14	A. M. Byers Co.
B15	J. Bishop & Co.
C1	Calstrip Steel Corp.
C2	Calumet Steel Div., Borg-Warner Corp.
C4	Carpenter Steel Co.
C5	Central Iron & Steel Div. Barium Steel Corp.
C7	Cleve. Cold Rolling Mills
C8	Cold Metal Products Co.
C9	Colonial Steel Co.
C10	Colorado Fuel & Iron
C11	Columbia-Geneva Steel
C12	Columbia Steel & Shaft.
C13	Columbia Tool Steel Co.
C14	Compressed Steel Shaft.
C16	Continental Steel Corp.
C17	Copperweld Steel Co.
C18	Crucible Steel Co.
C19	Cumberland Steel Co.
C20	Cuyahoga Steel & Wire
C22	Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23	Charter Wire Products
C24	G. O. Carlson Inc.
D2	Detroit Steel Corp.
D3	Detroit Tube & Steel
D4	Disston & Sons, Henry
D6	Driver Harris Co.
D7	Dickson Weatherproof Nail Co.
D8	Damascus Tube Co.
D9	Wilbur B. Driver Co.
E1	Eastern Gas&Fuel Assoc.
E2	Eastern Stainless Steel
E4	Electro Metallurgical Co.
E5	Elliott Bros. Steel Co.
E6	Empire Steel Corp.
F2	Firth Sterling Inc.
F3	Fitzsimmons Steel Co.
F4	Follansbee Steel Corp.
F5	Franklin Steel Div., Borg-Warner Corp.
F6	Fretz-Moon Tube Co.
F7	Ft. Howard Steel & Wire
F8	Ft. Wayne Metals Inc.
G2	Globe Iron Co.
G4	Granite City Steel Co.
G5	Great Lakes Steel Corp.
G6	Greer Steel Co.
H1	Hanna Furnace Corp.
H7	Helical Tube Co.
I-1	Igoe Bros. Inc.
I-2	Inland Steel Co.
I-3	Interlake Iron Corp.
I-4	Ingersoll Steel Div., Borg-Warner Corp.
I-7	Indiana Steel & Wire Co.
J1	Jackson Iron & Steel Co.
J3	Jessop Steel Co.
J4	Johnson Steel & Wire Co.
J5	Jones & Laughlin Steel
J6	Joslyn Mfg. & Supply
J7	Judson Steel Corp.
J8	Jersey Shore Steel Co.
K1	Kaiser Steel Corp.
K2	Keokuk Electro-Metals
K3	Keystone Drawn Steel
K4	Keystone Steel & Wire
K7	Kenmore Metals Corp.
L1	Laclede Steel Co.
L2	LaSalle Steel Co.
L3	Latrobe Steel Co.
L5	Lockhart Iron & Steel
L6	Lone Star Steel Co.
L7	Lukens Steel Co.
M1	McLouth Steel Corp.
M4	Mahoning Valley Steel
M5	Medart Co.
M6	Mercer Pipe Div., Sawhill Tubular Products
M8	Mid-States Steel & Wire
M12	Moltrup Steel Products
M13	Monarch Steel Co.
M16	Md. Fine & Special Wire
M17	Metal Forming Corp.
M18	Milton Steel Prod. Div., Merritt-Chapman&Scott
N2	National Supply Co.
N3	National Tube Div.
N5	Nelsen Steel & Wire Co.
N6	NewEng.HighCarb.Wire
N8	Newman-Crosby Steel
N9	Newport Steel Corp.
N12	Niles Rolling Mill Div.
N14	Nrthwst.Steel Roll. Mills
N15	Northwestern S.&W. Co.
N16	New Delphos Mfg. Co.
O3	Oliver Iron & Steel Corp.
O4	Oregon Steel Mills
P1	Pacific States Steel Corp.
P4	Phoenix Iron & Steel Co.
P5	Pilgrim Drawn Steel
P6	Pittsburgh Coke&Chem.
P7	Pittsburgh Steel Co.
P11	Pollak Steel Co.
P12	Portsmouth Division Detroit Steel Corp.
P13	Precision Drawn Steel
P14	Pitts. Screw & Bolt Co.
P15	Pittsburgh Metallurgical
P16	Page Steel & Wire Div., Amer. Chain & Cable
P17	Plymouth Steel Co.
P20	Prod. Steel Strip Corp.
R1	Reeves Steel & Mfg. Co.
R2	Republic Steel Corp.
R3	Rhode Island Steel Corp.
R5	Roebling's Sons, John A.
R6	Rome Strip Steel Co.
R7	Rotary Electric Steel Co.
R8	RelianceDiv.,EatonMfg.
R9	Rome Mfg. Co.
R10	Rodney Metals Inc.
S1	Seneca Wire & Mfg. Co.
S3	Sharon Steel Corp.
S4	Sharon Tube Co.
S5	Sheffield Steel Corp.
S6	Shenango Furnace Co.
S7	Simmons Co.
S8	Simonds Saw & Steel Co.
S13	Standard Forgings Corp.
S14	Standard Tube Co.
S15	Stanley Works
S16	Struthers Iron & Steel
S17	Superior Drawn SteelCo.
S18	Superior Steel Corp.
S19	Sweet's Steel Co.
S20	Southern States Steel
S25	StainlessWeldedProducts
S26	Specialty Wire Co. Inc.
T2	Tenn. Coal & Iron Div.
T3	Tenn. Prod. & Chem.
T4	Texas Steel Co.
T5	Thomas Strip Division, Pittsburgh Steel Co.
T6	Thompson Wire Co.
T7	Timken Roller Bearing
T9	Tonawanda Iron Div., Am. Rad. & Stan. San.
T13	Tube Methods Inc.
U4	Universal-Cyclops Steel
U5	United States Steel Corp.
U6	U. S. Pipe & Foundry
V2	Vanadium-Alloys Steel
V3	Vulcan Crucible SteelCo.
W1	Wallace Barnes Co.
W2	Wallingford Steel Co.
W3	Washburn Wire Co.
W4	Washington Steel Corp.
W6	Weirton Steel Co.
W7	W. Va. Steel & Mfg. Co.
W8	West. Auto Mach. Screw
W9	Wheatland Tube Co.
W10	Wheeling Steel Corp.
W12	Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13	Wilson Steel & Wire Co.
W14	Wisconsin Steel Div. International Harvester
W15	Woodward Iron Co.
W18	Wyckoff Steel Co.
W19	Worcester Pressed Steel
Y1	Youngstown Sheet&Tube

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	8.00	8.60	10.55	12.85
Bridgeport,Conn.(10) S15	5.45	7.65	8.60	10.55	12.85
Bristol,Conn. W1	...	...	8.90	10.85	....
Carnegie,Pa. S18	...	7.65	8.60	10.55	12.85
Cleveland A7	5.45	7.65	8.60	10.55	12.85
Dearborn,Mich. D3	5.65	7.85	8.80	....	....
Detroit D2	5.65	7.85	8.45	10.55	....
Dover,O. G6	5.45	7.65	8.60	10.55	12.85
FranklinPark,Ill. T6	5.70	7.80	8.75	10.70	13.00
Harrison,N.J. C18	...	...	8.90	10.85	13.15
Mattapan,Mass. T6	6.10	7.95	8.90	10.85	13.15
NewBritn.,Conn.(10) S15	5.75	7.65	8.60	10.55	12.85
NewCastle,Pa. B4	5.45	7.65	8.60	....	....
NewCastle,Pa. E5	5.45	8.00	8.60	10.55	12.85
NewHaven,Conn. D2	5.90	7.95	8.55	10.65	....
NewYork W3	...	7.95	8.90	10.85	13.15
Pawtucket,R.I. (11) N8	...	7.65	8.60	10.55	12.85
Pawtucket,R.I. (12) N8	6.65	7.95	8.90	10.85	13.15
Sharon,Pa. S3	5.45	7.65	8.60	10.55	12.85
Trenton,N.J. R5	...	7.95	8.90	10.85	13.15
Wallingford,Conn. W2	5.90	7.95	8.90	10.85	13.15
Warren,O. T5	5.45	7.65	8.60	10.55	12.85
Weirton,W.Va. W6	5.45	7.65	8.60	10.55	12.85
Worcester,Mass. A7	6.30	7.95	8.90	10.85	13.15
Worcester,Mass. T6	6.10	7.95	8.90	10.85	13.15
Youngstown C8	...	7.65	8.60	10.55	12.85
Spring Steel (Tempered)					
Buffalo W12	...	...	12.50	....	....
Bristol,Conn. W1	...	...	12.50	15.00	....
FranklinPark,Ill. T6	...	...	13.25	15.75	18.75
Harrison,N.J. C18	...	...	12.50	15.00	18.00
NewYork W3	...	...	12.50	15.00	18.00
Trenton,N.J. R5	...	...	12.50	15.00	18.00
Worcester,Mass. T6	...	...	12.50	15.00	18.00
Worcester,Mass. W12	...	...	12.50	....	....
Youngstown C8	...	...	12.50	15.00	18.00

SILICON STEEL

H.R. SHEETS (22 gage) (Cut Lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	...	...	8.75	9.75	10.65
Brackenridge,Pa. A4	...	...	8.75	9.75	10.65
IndianaHarbor,Ind. I-2	7.85	8.15	8.75	9.75	....
Mansfield,O. E6	7.85	8.15	8.75	9.75	10.65
Newport,Ky. N9	7.85	8.15	8.75	9.75	10.65
Niles,O. N12	7.85	8.15	8.75	9.75	....
Vandergrift,Pa. U5	...	8.15	8.75	9.75	10.65
Warren,O. R2	7.85	8.15	8.75	9.75	....

C.R. COILS & CUT LENGTHS, (22 Ga.)

Fully Processed (Semi processed ½c lower)	Field	Armature	Electric	Motor	Dynamo
GraniteCity,Ill. G4	8.25*	8.60*	9.20*	10.20*	....
IndianaHarbor,Ind. I-2	8.05	8.40*	9.00*	....	....
Vandergrift,Pa. U5	8.05*	8.90	9.50	10.50	11.40
Warren,O. R2	8.05†	8.90	9.50	10.50	11.40
Zanesville,O. A10	...	8.90	9.50	10.50	11.40

H.R. SHEETS (22 Gage) (Cut Lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	11.60	12.15	12.65	13.65
Brackenridge,Pa. A4	11.60	....	....	....
Newport,Ky. N9	11.60	....	....	....
Vandergrift,Pa. U5	11.60	12.15	12.65	13.65
Zanesville,O. A10	12.35§	12.90§	13.40§	14.40§

C.R. COILS & CUT LENGTHS (22 Ga.)	T-100	T-90	T-80	T-73	T-72
Butler,Pa. A10	....	....	16.25	16.75	....
Vandergrift,Pa. U5	13.65	14.65	16.25	16.75	12.35‡
Warren,O. R2	....	....	....	....	12.35‡

*Semiprocessed. †Fully processed only §Coils; cut lengths ⅝c lower. ‡Coils annealed; semiprocessed ½c lower.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor, Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	7.65	8.05
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	8.95
Weirton,W.Va.W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.10

MANUFACTURING TERNES (Special Coated)	
Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, 8 lb (Commercial Quality)	
Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

MANUFACTURING TERNES, LT. Coated, 6 lb	
Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 lb Coated)	
Gary,Ind. U5	9.75

—WIRE—

WIRE, Manufacturers Bright, Low Carbon	
AlabamaCity,Ala. R2	5.525
Aliquippa,Pa. J5	5.525
Alton,Ill. L1	5.70
Atlanta A11	5.725
Bartonville,Ill. K4	5.625
Buffalo W12	5.525
Chicago W13	5.525
Cleveland A7, C20, R2	5.525
Crawfordsville,Ind. M8	5.625
Donora,Pa. A7	5.525
Duluth,Minn. A7	5.525
Fairfield,Ala. T2	5.525
Fostoria,O. (24) S1	5.75
Houston S5	5.925
Jacksonville,Fla. M8	6.05
Johnstown,Pa. B2	5.525
Joliet,Ill. A7	5.525
KansasCity,Mo. S5	6.125
Kokomo,Ind. C16	5.625
LosAngeles B3	6.475
Minnequa,Colo. C10	5.775
Monessen,Pa. P7	5.525
No.Tonawanda B11	5.525
Palmer,Mass. W12	5.825
Pittsburg,Calif. C11	6.475
Portsmouth,O. P12	5.525
Rankin,Pa. A7	5.525
So.Chicago,Ill. R2	5.525
So.SanFrancisco C10	6.475
SparrowsPoint,Md. B2	5.625
Sterling,Ill. (1) N15	5.525
Struthers,O. Y1	5.525
Waukegan,Ill. A7	5.525
Worcester,Mass. A7	5.825

WIRE, MB Spring, High Carbon	
Aliquippa,Pa. J5	6.925
Alton,Ill. L1	7.10
Bartonville,Ill. K4	7.025
Buffalo W12	6.925
Cleveland A7	6.925
Donora,Pa. A7	6.925
Duluth,Minn. A7	6.925
Fostoria,O. S1	6.925
Johnstown,Pa. B2	6.925
LosAngeles B3	7.875
Millbury,Mass.(12) N6	7.225
Minnequa,Colo. C10	7.175
Monessen,Pa. P7, P16	6.925
Muncie,Ind. I-7	7.125
Palmer,Mass. W12	7.225
Pittsburg,Calif. C11	7.875
Portsmouth,O. P12	6.925
Roebling,N.J. R5	7.225
So.Chicago,Ill. R2	6.925
So.SanFran. C10	7.875
SparrowsPt., Md. B2	7.025
Struthers,O. Y1	6.925
Trenton,N.J. A7	7.225
Waukegan,Ill. A7	6.925
Worcester A7, J4	7.225
Worcester T6, W12	7.225

WIRE, Upholstery Spring	
Aliquippa,Pa. J5	6.625
Alton,Ill. L1	6.80
Buffalo W12	6.625
Cleveland A7	6.625
Donora,Pa. A7	6.625
Duluth,Minn. A7	6.625
Johnstown,Pa. B2	6.625
LosAngeles B3	7.575
Minnequa,Colo. C10	6.80
Monessen,Pa. P7, P16	6.625
NewHaven,Conn. A7	6.925
Palmer,Mass W12	6.925
Pittsburg,Calif. C11	7.575
Portsmouth,O. P12	6.625
Roebling,N.J. R5	6.925
So.Chicago,Ill. R2	6.625
So.SanFrancisco C10	7.575
SparrowsPoint,Md. B2	6.725
Trenton,N.J. A7	6.925
Waukegan,Ill. A7	6.625
Worcester,Mass. A7	6.925

WIRE, Fine & Weaving(8" Coils)	
Alton,Ill L1	10.75
Bartonville,Ill. K4	10.65
Buffalo W12	10.55
Chicago W13	10.55
Cleveland A7	10.55
Crawfordsville,Ind. M8	10.65
Fostoria,O. S1	10.55
Jacksonville,Fla. M8	11.08
Johnstown,Pa. B2	10.55
Kokomo,Ind. C16	10.55
Minnequa,Colo. C10	10.30
Monessen,Pa. P16	10.55
Muncie,Ind. I-7	10.75
Palmer,Mass. W12	10.85
Roebling,N.J. R5	10.85
So.SanFrancisco C10	10.90
Waukegan,Ill. A7	10.55
Worcester,Mass. A7, T6	10.85

WIRE, Galv'd ACSR for Cores	
Bartonville,Ill. K4	9.50
Buffalo W12	9.50
Johnstown,Pa. B2	9.50
Minnequa,Colo. C10	9.625
Monessen,Pa. P16	9.50
Muncie,Ind. I-7	9.70
Roebling,N.J. R5	9.80
SparrowsPt.,Md. B2	9.60

ROPE WIRE	(A)
Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo, W12	9.35
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.35
Monessen,Pa. P7, P16	9.35
Muncie,Ind. I-7	9.55
Palmer,Mass W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	9.65
SparrowsPt. B2	9.45
Struthers,O. Y1	9.35
Worcester J4, T6	9.65

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Tire Bead	
Alton,Ill. L1	12.75
Bartonville,Ill. K4	12.65
Monessen,Pa. P16	12.55
Roebling,N.J. R5	12.85

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	7.45
Buffalo W12	7.45
Cleveland A7	7.45
Crawfordsville,Ind. M8	7.55
Dover,O. G6	7.45
Fostoria,O. S1	7.45
Kokomo,Ind. C16	7.55
FranklinPark, Ill. T6	7.60
Massillon,O. R8	7.45
Monessen,Pa. P7, P16	7.45
Pawtkt.,R.I.(12) N8	7.75
Trenton,N.J. R5	7.75
Worcester A7, T6, W12	7.75

WIRE, Merchant Quality (6 to 8 gage)	An'ld.	Galv.
Ala.City R2	6.675	7.075••
Aliquippa J5	6.675	7.20•
Atlanta A11	6.775	7.30
Bartonville(48)K4	6.775	7.30
Buffalo W12	6.675	7.075†
Cleveland A7	6.675	....
Crawfordsville M8	6.775	7.30
Donora,Pa. A7	6.675	7.075†
Duluth,Minn. A7	6.675	7.075†
Fairfield T2	6.675	7.075†
Houston,Tex. S5	7.075	7.475
Jacksonville,Fla. M8	7.20	7.73
JohnstownB2(48)	6.675	7.225•
Joliet,Ill. A7	6.675	7.075†
KansasCity,Mo.S5	7.275	7.675
Kokomo C16	6.775	7.175†
LosAngeles B3	7.625	....
Minnequa C10	6.925	7.325••
Monessen P7(48)	6.675	7.225
Palmer W12	6.975	7.375†
Pitts.,Calif. C11	7.625	8.025†
Portsmouth,O. P12	*6.675*	
Rankin A7	6.675	7.075†
So.Chi'go R2	6.675	7.075••
S.S.Frn.(48)C10	7.625	8.025••
Spar'wsPt.B2(48)	6.775	7.325•
Sterl'g(1)(48)N15	6.675	7.175
Struthers,O. Y1	6.675	7.175
Worcester A7	6.975	....

• Based on 10c zinc; † 5c zinc; •• Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga.	Col.
Ala.City,Ala. R2	140••
Ala.City, 17 ga. R2	235••
Ala.City 18 ga. R2	245••
Aliq'ppa,Pa.9-14½ga. J5	143•
Atlanta A11	145
Bartonville,Ill. K4	145
Crawfordsville,Ind. M8	145
Donora,Pa. A7	140†
Duluth,Minn. A7	140†
Fairfield,Ala. T2	140†
Houston,Tex. S5	148
Johnstown,Pa. B2	143
Johnstown 17 ga.,6"B2	234
Johnstown 4" B2	237
Joliet,Ill. A7	140†
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142†
Minnequa,Colo. C10	148••
Monessen,Pa. 9 ga. P7	145
Pittsburg,Calif. C11	163†
Rankin,Pa. A7	140†
So.Chicago,Ill. R2	140••
Sterling,Ill. (1) N15	142

† Based on 5c zinc; • 11c zinc; •• Subject to zinc equalization extras.

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	149
Atlanta A11	151
Bartonville,Ill. K4	151
Crawfordsville,Ind. M8	151
Donora,Pa. A7	149
Duluth,Minn. A7	149
Fairfield,Ala. T2	149
Joliet,Ill. A7	149
KansasCity,Mo. S5	161
Kokomo,Ind. C16	151
Minnequa,Colo. C10	154
Pittsburg,Calif. C11	173
So.Chicago,Ill. R2	149
So.SanFran.,Calif. C10	173
SparrowsPoint,Md. B2	151
Sterling,Ill.(1) N15	149

WIRE, Barbed	Col.
AlabamaCity R2	153••
Aliquippa J5	150•
Atlanta A11	158
Bartonville,Ill. K4	158
Crawfordsville,Ind. M8	158
Donora,Pa. A7	153†
Duluth,Minn. A7	153†
Fairfield,Ala. T2	153†
Houston,Tex. S5	161
Johnstown,Pa. B2	156•
Joliet,Ill. A7	153†
KansasCity,Mo. S5	165
Kokomo,Ind. C16	155†
Minnequa,Colo. C10	159••
Monessen,Pa. P7	157
Pittsburg,Calif. C11	173†
Rankin,Pa. A7	153†
So.Chicago,Ill. R2	153••
S.SanFrancisco C10	176••
SparrowsPoint,Md. B2	158•
Sterling,Ill. (1) N15	155

† Based on 5c zinc; • 11c zinc; •• Subject to zinc equalization extras.

WIRE, (16 gage)	An'ld. Stone	Galv. Stone
Ala.City R2	12.50	14.05••
Aliquippa J5	12.50	14.30•
Bartonville K4	12.60	14.40
Buffalo W12	12.50	....
Cleveland A7	12.50	....
Crawfordsville M8	12.50	14.30
Fostoria,O. S1	12.60	14.15
Johnstown B2	12.50	14.35•
Kokomo C16	12.60	14.15†
Minnequa C10	12.75	14.45••
Palmer,Mass.W12	12.50	14.05†
Pitts.,Calif. C11	12.85	14.40†
SparrowsPt. B2	12.60	14.45•
Sterling(1) N15	12.50	14.25
Waukegan A7	12.50	14.05†
Worcester A7	12.80	....

• Based on 11c zinc; † 5c zinc; •• Subject to zinc equalization extras.

NAILS, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala R2	131
Aliquippa,Pa. J5	131
Atlanta A11	133
Bartonville,Ill. K4	133
Chicago,Ill. W13	131
Cleveland A9	137
Crawfordsville,Ind. M8	133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Galveston,Tex. D7	139
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	136
Monessen,Pa. P7	131
Pittsburg,Calif. C11	150
Rankin,Pa. A7	131
So.Chicago,Ill. R2	131
SparrowsPt.,Md. B2	133
Sterling,Ill. (1) N15	131
Worcester,Mass. A7	137

NAILS, CUT (100 lb keg) To dealers (33)	
Conshohocken,Pa. A3	$8.00
Wheeling,W.Va. W10	8.00

STAPLES, Polished Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	133
Aliquippa,Pa. J5	133
Atlanta A11	135
Bartonville,Ill. K4	135
Crawfordsville,Ind. M8	135
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Johnstown,Pa. B2	133
Joliet,Ill. A7	133
Kokomo,Ind. C16	135
Minnequa,Colo. C10	138
Monessen,Pa. P7	133
Pittsburg,Calif. C11	152
Rankin,Pa. A7	133
So.Chicago,Ill. R2	133
SparrowsPt.,Md. B2	135
Sterling,Ill. (1) N15	133
Worcester,Mass. A7	139

—FENCE POSTS—

	Col.
ChicagoHts.,Ill. C2, I-2	145
Duluth,Minn. A7 (49)	145
Franklin,Pa. F5	145
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	150
Moline,Ill. R2	145
So.Chicago,Ill. R2	145
Tonawanda,N.Y. B12	*145*
Williamsport,Pa. S19	158

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25
Ambridge, Pa. N2 (†)	15.75	...	19.75	...	22.25	...	23.75	...	23.75	...	23	...	25.5	...
Lorain, O. N3 (*)	15.75	4.5	19.75	5.5	22.25	8	23.75	9.5	23.75	9.5	23	8.75	25.5	11.25
Youngstown Y1 (††)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

	2		2½		3		3½		4		5		6	
Youngstown R2 (**)	15.75	1.5	19.75	3.5	22.25	6.0	23.75	7.5	23.75	7.5	23	7.5	25.5	6.75

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	⅛		¼		⅜		½		¾		1		1¼		1½	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c		27.5c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Alton, Ill. L1 (§)	...	...	....	...	....	....	24.25	9	27.25	13	29.75	16.5	32.25	17.5	32.75	18.25
Benwood, W. Va. W10(††)	25.5	+0.25	17.75	+5.5	10.25	+10	26.25	11	29.25	15	31.75	18.5	34.25	19.5	34.75	20.25
Butler, Pa. F6 (†)	26.5	+2.75	19.5	+7.25	12.5	+13	....	..	....	..	....	...	....	....	....	....
Etna, Pa. N2 (†)	...	...	....	...	....	....	26.25	7	29.25	11	31.75	14.5	34.25	16.25	34.75	17.25
Fairless, Pa. N3	...	...	....	...	....	....	24.25	..	27.25	..	29.75	...	32.25	....	32.75	....
Fontana, Calif. K1 (§)	...	...	....	...	....	....	13.25	+3	16.25	1	18.75	4.5	21.25	5.5	21.75	6.5
Ind. Harbor Y1 (††)	...	...	....	...	....	....	25.25	9	28.25	13	30.75	16.5	33.25	17.5	33.75	18.5
Lorain, O. N3 (*)	...	...	....	...	....	....	26.25	16	29.25	20	31.75	23.5	34.25	23	34.75	24
Sharon, Pa. S4 (‡)	26.5	−0.25	19.50	+4.25	12.5	+8.5	....	..	....	..	....	...	....	....	....	....
Sharon, Pa. M6	...	...	....	...	....	....	26.25	12	29.25	16	31.75	19.5	34.25	20	34.75	21
Sparrows Pt., Md. B2 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	24.25	8	27.25	12	29.75	15.5	32.25	16.5	32.75	17.5
Youngstown R2 (**)	...	...	....	...	....	....	26.25	12	29.25	16	31.75	19.5	34.25	20.0	34.75	21.0
Youngstown Y1 (††)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Wheatland, Pa. W9 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5

Size—Inches	2		2½		3		3½		4	
List Per Ft	37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....
Alton, Ill. L1 (§)	33.25	18.75	34.75	18	34.75	18	....	....	....	....
Benwood, W.Va. W10(††)	35.25	20.75	36.75	20.5	36.75	20.5	27.75	11	27.75	11
Etna, Pa. N2 (†)	35.25	17.25	36.75	18.5	36.75	18.5	27.75	9	27.75	9
Fairless, Pa. N3	33.25	....	34.75	....	34.75	....	25.75	....	25.75	....
Fontana, Calif. K1 (§)	22.25	7	23.75	7	23.75	7	....	....	....	....
Ind. Harbor, Ind. Y1 (††)	34.25	19	35.75	19	35.75	19	....	....	....	....
Lorain, O. N3 (*)	35.25	24.5	36.75	23	36.75	23	....	....	....	....
Sharon, Pa. M6	35.25	21.5	36.75	21	36.75	21	....	....	....	....
Sparrows Pt., Md. B2 (§)	32.25	18	34.75	18	34.75	18	25.75	8.5	25.75	8.5
Youngstown R2 (**)	35.25	21.5	36.75	21.0	36.75	21.0	27.75	11.5	27.75	11.5
Youngstown Y1 (††)	35.25	20	36.75	20	36.75	20	....	....	....	....
Wheatland, Pa. W9 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; (§), 10c to under 11c; (††), 10.50c-11.50c; (**), 9.50c; with discounts adjusted on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollar per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	21.31	18.44
1¼	13	....	25.24	18.12
1½	13	23.12	27.89	20.01
1¾	13	26.84	32.37	23.66
2	13	30.08	36.28	26.51
2¼	13	34.18	41.23	29.86
2¼	12	37.10	44.75	32.41
2½	12	40.51	48.86	35.70
2¾	12	43.85	52.90	38.66
3	12	45.92	55.39	41.23

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. Tee Rails All No. 2	Std. Tee Rails 60 lb Under
Bessemer, Pa. U5	4.325	4.225	4.275	5.20
Ensley, Ala. T2	4.325	4.225	.....	5.20
Fairfield, Ala. T2	....	....	....	5.20
Gary, Ind. U5	4.325	4.225	4.275	...
Huntington, W.Va. W7	....	....	....	5.20
IndianaHarbor, Ind. I-2	4.325	4.225	4.275	...
Johnstown, Pa. B2	....	....	...	(16)5.20
Lackawanna, N.Y. B2	4.325	4.225	....	5.20
Minnequa, Colo. C10	4.325	4.125	....	5.70
Steelton, Pa. B2	4.325	4.225	....	...
Williamsport, Pa. S19	....	....	....	5.20

TIE PLATES

Fairfield, Ala. T2	5.125
Gary, Ind. U5	5.125
Ind. Harbor, Ind. I-2	5.125
Lackawanna, N.Y. B2	5.125
Minnequa, Colo. C10	5.125
Pittsburg, Calif. C11	5.275
Seattle B3	5.275
Steelton, Pa. B2	5.125
Torrance, Calif. C11	5.275

TRACK BOLTS (20) Treated

Cleveland R2	11.00
KansasCity, Mo. S5	11.00
Lebanon, Pa. B2	11.00
Minnequa, Colo. C10	11.00
Pittsburgh O3, P14	11.00

JOINT BARS

Bessemer, Pa. U5	5.275
Fairfield, Ala. T2	5.275
Ind. Harbor, Ind. I-2	5.275
Joliet, Ill. U5	5.275
Lackawanna, N.Y. B2	5.275
Minnequa, Colo. C10	5.275
Steelton, Pa. B2	5.275

AXLES

Ind. Harbor, Ind. S13	6.50
Johnstown, Pa. B2	6.50

STANDARD TRACK SPIKES

Ind. Harbor, Ind. I-2, Y1	7.05
KansasCity, Mo. S5	7.30
Lebanon, Pa. B2	7.05
Minnequa, Colo. C10	7.05
Pittsburgh J5	7.05
Seattle B3	7.55
So. Chicago, Ill. R2	7.05
Struthers, O. Y1	7.05
Youngstown R2	7.05

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger	8.90c
$\frac{7}{16}$-in. under	26.5 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers	List

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	4
$\frac{9}{16}$-in. & ⅝-in.	5
¾-in. and larger	3
Longer than 6 in.:	
All diams.	+4
Lag bolts, all diams.:	
6 in. and shorter	12
Over 6 in. long	8
Ribbed Necked Carriage	5
Blank	25
Plow	25
Step, Elevator, Tap and Sleigh Shoe	12
Tire Bolts	List
Boiler & Fitting-Up Bolts	23

NUTS

H.P. & C.P., regular & heavy:	
Square, all sizes	58
H.P., Hex, regular & heavy:	
¾" and smaller	58
⅞" to 1⅛", inclusive	60
1¼" to 1½", inclusive	62
1⅝" and larger	58
C.P. Hex, regular heavy:	
All sizes	58
Hot Galv. Nuts (all types):	
¾" and smaller	40
⅞" to 1½", inclusive	43
Finished Hex Nuts:	
New standard, all sizes	58
Semifinished & Slotted Hex.:	
Regular and heavy, all sizes	58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter	34
1 in. and smaller diam. x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼-in. diam. & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	47.5 & 10
Plated finishes	30 x 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	38
¾-in. through 1 in.	22
Longer than 6 in.:	
⅝-in. and smaller	20
¾-in. through 1 in.	7

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron:	Cents
98+% Fe, annealed	18.00
Unannealed	14.50
Swedish, c.i.f. N.Y., c.l., in bags	11.25
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99+% Fe)	36.50
Unannealed (99+% Fe) (minus 325 mesh)	53.50
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Atomized, 500 lb drums, freight allowed:	
Carlots	31.00
Ton lots	34.00
Antimony, 500 lb lots	32.00*
Brass, 20-ton lots	29.25-36.50
Bronze, 10-ton lots	51.00-60.00
Copper:	
Electrolytic	13.50*
Reduced	13.50*
Lead	7.50*
Magnesium	75.00-85.00
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel unannealed	89.50
Nickel-Silver 5-ton lots	47.00
Silicon	43.50
Solder	8.50*
Stainless Steel, 302	91.00
Tin	14.00*
Zinc, 10-ton lots	17.50-25.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	4.95
Less than 1000 lb	5.10
Chromium, electrolytic 99.9% Cr min.	3.60

*Plus cost of metal.

Footnotes

(1) Chicago base.
(2) Angles, flat, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛" to 1 7/16"; 1 7/16" to 1 15/16" 4.58c; 1 15/16" to 7 5/16" 4.95c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.40c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon and 0.35c for H.S.-L.A.
(31) Base; deld. within mill county.
(33) To jobbers, deduct 20c
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(48) 6-7 gage.
(49) T-post; deduct 2 cols for U-post.

STAINLESS STEEL MILL PRICES

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	46.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B ..	18.50	21.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
304L ...	....	....	36.75	....	....	42.75	45.25	54.25	49.00
306	19.50	25.50	....	38.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	63.50	62.00
309S ...	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
316L ...	....	....	52.50	....	....	61.00	64.25	70.00	72.00
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
330	....	....	58.00	....	....	68.50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F ...	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.75	28.25	53.00	39.50	40.75	59.75	71.00
501	....	....	14.00	14.50	21.25	16.00	18.25	30.50	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Shenango Agaloy Tube Co.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Sheets Carbon Base 20%	Sheets Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60	32.50-32.70	32.50	77.00
310	36.50	41.00	....	144.00
316	32.60	37.70-42.75	42.75	....
318	37.00	42.20	....	....
321	29.30	34.40-37.00	37.00	111.00
347	30.40	35.50-40.50	40.50	130.00
405	23.40	30.60	....	....
410	22.90	30.10	....	....
430	22.90	30.10	....	....
Inconel ..	41.23	54.18	....	165.00
Nickel ..	37.50	50.90	....	....
Monel ...	38.90	51.80	....	....
Copper* .	....	....	46.00	....

	Strip, Carbon Base Cold-Rolled 10%	Strip, Carbon Base Cold-Rolled Both Sides	Strip, Carbon Base Hot-Rolled 10%	Strip, Carbon Base Hot-Rolled Both Sides
Copper* .	....	....	46.00	....

---

*Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates. Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.25	5% Cr Hot Work....	0.39
Extra Carbon	0.30	W-Cr Hot Work	0.41
Special Carbon	0.355	V-Cr Hot Work..	0.42-.43
Oil Hardening ..	0.37-.390	Hi-Carbon-Cr. ..	0.665-.70

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	3.875
18.25	4.25	1	4.75	...	2.160-2.320
18	4	2	9	...	2.515
18	4	2	....	...	1.640
18	4	1	....	...	1.480
13.5	4	3	....	...	1.735
6.4	4.5	1.9	....	5	1.005-1.055
6	4	3	....	6	1.240
2	1.4	1.2	....	...	0.495
1.5	4	1	....	8.5	0.865-0.895

Tool Steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3 M14, S8, U4, V2 and V3.

PIG IRON Gross Ton

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
AlabamaCity R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	....	....
Woodward,Ala. W15	52.38	52.88	56.50†	....
Cincinnati, deld.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No.Tonawanda,N.Y. T9	....	56.50	57.00	....
Boston, deld.	66.65	67.15	67.65	....
Rochester,N.Y., deld.	59.02	59.52	60.02	....
Syracuse,N.Y., deld.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, deld.	58.17	58.67	58.67	59.17
Muskegon,Mich., deld.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron,O., deld. from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
New York, deld.	....	62.28	62.78	....
Newark, deld.	61.02	61.52	62.02	62.52
Birdsboro,Pa. B10	58.00	58.50	....	....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Philadelphia, deld.	59.66	60.16	60.66	61.16
Troy,N.Y. R2	58.00	58.50	59.00	....
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Ambridge, Aliquippa, deld.	57.37	57.87	57.87	58.37
McKeesRocks, deld.	57.04	57.54	57.54	58.04
Lawrenceville,Homestead, Wilmerding,Monaco, deld.	57.66	58.16	58.16	58.66
Verona,Trafford, deld.	58.19	58.69	58.69	59.19
Brackenridge, deld.	58.45	58.95	58.95	59.45
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....
Monessen,Pa. P7	56.00	....	....	....
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., deld.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	....	63.00	63.50	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	56.00	56.50	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T3	....	....	56.50	....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, deld.	61.76	62.26	....	....

---

*Low phos. southern grade. †Phos., 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$67.00
Buffalo H1	68.25

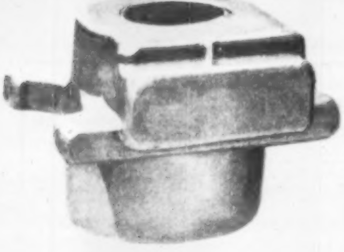
ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

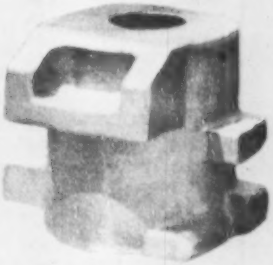
(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$87.50
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	92.00
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frt, allowed K2	95.00
Wenatchee,Wash. OH & Fdry, freight allowed K2	92.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$61.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, deld.	67.55
Troy,N.Y. R2	64.00





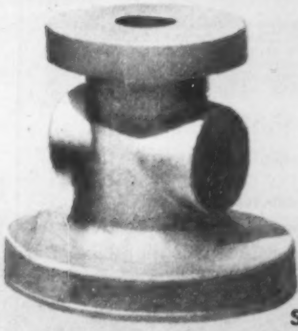
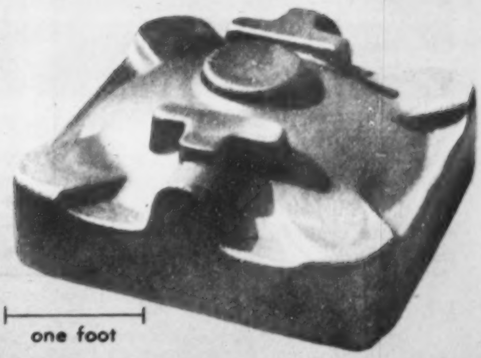
LARGE SIZES AND INTRICATE SHAPES CAN NOW BE **FORGED**

The press forgings produced by Cameron approach for the first time the broad field of intricate shapes and patterns that have been limited heretofore to steel castings. Thus, the many manufacturing advantages of steel forgings are made more widely available. These advantages include controllable grainflow characteristics and a uniformly high quality, free from internal defects such as porosity and inclusions.

The Cameron forging process opens the door to a great many design features which will aid in producing equipment of greater utility and at a lower cost in manpower and material.

FORGE AND ORDNANCE DIVISION

Cameron
IRON WORKS, INC.
HOUSTON, TEXAS

Scale ├─────┤ one foot

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Erie, Cincinnati, St. Paul, 15 cents; Seattle and Spokane, Wash., no charge.)

	SHEETS			STRIP		BARS			Standard	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]	Structural Shapes	Carbon	Floor
Baltimore	6.20	7.64	7.78	7.00	...	6.86	8.17[6]	12.04	6.98	6.85	7.98
Birmingham	6.10	7.00	8.00[2]	6.30	...	6.15	8.90	....	6.35	6.35	8.25
Boston	6.89	7.83	9.18	7.13	...	6.87	8.35	12.28	7.06	7.13	8.26
Buffalo	6.18	7.15	8.96	6.79	...	6.35	7.70	12.17	6.59	6.68	7.88
Charlotte, N. C.	6.95	7.80	8.69	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.18	7.12	8.00	6.42	...	6.28	7.30	11.75	6.46	6.33	7.46
Cincinnati	6.51	7.19	8.42	6.72	...	6.58	7.66	12.17	6.93	6.80	7.88
Cleveland	6.18	7.12	7.90	6.58	...	6.34	7.40	11.89	6.79	6.50	7.79
Detroit	6.38	7.31	8.27	6.71	7.36	6.56	7.60	12.12	6.93	6.80	7.80
Erie, Pa.	6.13	...	8.15	6.38	...	6.23	7.50[6]	....	6.50	6.36	7.79
Houston	7.15	7.60	9.40	7.45	9.30	7.45	9.30	....	7.35	7.20	8.55
JerseyCity,N.J.	6.54	7.45	8.42	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Los Angeles	7.25	9.00	9.35	7.55	11.20	7.15	9.10	13.05	7.35	7.20	9.25
Milwaukee	6.35	7.29	8.17	6.59	...	6.45	7.57	11.92	6.63	6.50	7.63
Moline, Ill.	6.53	7.47	8.35	6.77	...	6.63	7.65	....	6.81	6.68	...
New York	6.54	7.45	8.42	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Newark, N. J.	6.78	7.75	8.42	7.16	...	7.06	8.43[6]	....	6.90	6.99	8.30
Norfolk, Va.	6.90	...	...	7.20	...	7.20	8.50	....	7.20	7.15	7.85
Philadelphia	6.35	7.13	7.90	7.02	8.80	6.87	8.19[6]	11.89	6.67	6.63	7.65
Pittsburgh	6.18	7.12	8.00	6.55	...	6.28	7.65	11.89	6.46	6.33	7.46
Portland, Oreg.	8.15	8.70	9.40	7.90	...	7.60	10.65	....	7.50	7.55	9.40
Richmond, Va.	6.50	7.45	8.00	7.10	...	7.05	7.95	....	7.10	6.85	8.10
St. Louis	6.48	7.42	8.30	6.72	...	6.58	7.70	12.05	6.86	6.73	7.86
St. Paul	6.84	7.78	8.66	7.08	...	6.94	8.06	....	7.12	6.99	8.12
San Francisco	7.35	8.70	10.15	7.60	...	7.15	9.75	13.05	7.25	7.20	9.25
Seattle	8.15	9.50	9.80	8.00	...	7.60	10.65	13.50	7.50	7.60	9.40
Spokane	8.15	9.40[7]	9.80	7.60	...	7.60	10.55[8]	14.15	7.25	7.35	9.40
Washington	6.71	8.15	8.35	7.51	...	7.37	8.43	....	7.49	7.36	8.49

*Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extras excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, and cold-finished bars, 2000 lb and over, except in Seattle where base is 2000 to 9999 lb; [2]—500 to 9999 lb; [5]—1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 lb to 3999; [8]—under ½ in.

Warehouse Steel Sales Rise Slowly

Distributors in some districts expect March to be best month in quarter, but marked improvement may not materialize until second quarter. Pipe sellers making concessions

Philadelphia—Business of the general line warehouses is moderately good. If anything, the trend is slightly upward, with most distributors anticipating that March will be the best month in the current quarter. Resellers are still not working off some of the odd sizes and types they accumulated during the steel stringency as fast as they would like to, but they report their inventory situation otherwise is in good balance. This is true now of all the major products, except in light wide flange sections, and even these are not too scarce. Merchant pipe jobbers still have more tonnage on hand than they wish to carry and they continue to make concessions.

Cleveland—Warehouse order volume is described as fair, but the distributors could easily handle additional tonnage with their inventories now in the best balance they have been in several years. At the same time, receipts from the mills are prompt. The warehouses are not ordering like they were a year ago at this time, for, with relatively prompt shipments available from producers, they are inclined to watch inventories closely and order only in line with demand requirements.

Chicago—Warehouses now speculate improved demand is more likely to come in second quarter than in March. February had been guessed as the low month but this distinction may shift to March. Of all consuming groups only farm equipment looks better. There is still some unloading of excess tonnages by brokers at bargain prices.

Pittsburgh—Sales remain approximately at the January level. Any improvements are due more to concerted sales campaigns aimed at small orders than to gains in industrial operations.

With a pickup expected in March, distributors are optimistic. They point out that the replacement situation from mills is much improved, as are warehouse deliveries.

Cincinnati—"We are operating in a cross current of sales of excessive stocks and continuous inventory re-

STEEL IMPORT PRICES

(Base, per 100 lb, landed, duty paid)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A-305	$4.75	$4.85	$4.75	$5.00
Bar Size Angles	4.39	4.49	4.39	4.67
Structural Angles	4.39	4.49	4.39	4.67
I-Beams	4.39	4.49	4.39	4.67
Wide Flange Beams	4.94	5.02	4.94	5.22
Sheet and Plate, 10 gage, 11 gage, 5′ x 10′	5.87	5.95	5.87	6.25
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.00	25.70	25.50	26.34
Barbed Wire	6.20	6.30	6.20	6.48
Merchant Bars	4.65	4.75	4.65	4.93
Hot Rolled Bands	4.65	4.75	4.65	4.93
Wire Rods, Thomas Commercial No. 5	4.77	4.84	4.82	5.09
Wire Rods, O-H, Cold Heading Quality No. 5	5.23	5.30	5.28	5.55
Channels	4.49	4.59	4.49	4.77
Bright Common Wire Nails, 8d	6.55	6.65	6.60	6.85

Size O.D.	Wgt/Foot/Lb	Gulf Port	West Coast	Vancouver
Seamless A.P.I. Casing, Grade J-55:				
5½ in.	15.5	$1.47/ft	$1.51/ft	$1.32/ft
7 in.	23	2.10/ft	2.17/ft	1.90/ft
Seamless N-80 Casing:				
5½ in.	17	1.94/ft	2.00/ft	1.75/ft
7 in.	23	2.50/ft	2.70/ft	2.36/ft
Seamless J-55 Tubing:				
2⅜ in.	4.7	0.60/ft	0.63/ft	0.55/ft
2⅞ in.	6.5	0.80/ft	0.83/ft	0.73/ft

Sources of shipment: Western continental European (Schuman Plan) countries.

ductions," says one distributor. Seeing no let up in this kind of activity, he predicts that warehouses will not feel a pickup until second quarter.

Los Angeles — Some fabricators with lessened steel requirements are trimming inventories by cutting purchases as much as 75 per cent. Others are liquidating their stocks and withdrawing from the market for the next few months. On the whole, fabricators are generally optimistic.

San Francisco—While order backlogs now are more or less a thing of the past, warehouses are continuing to do good current business. Virtually all are well stocked to take care of normal needs, but for the most part they have avoided building up excessive inventories.

Seattle—Following a slow January, due largely to weather, the current month has opened with improved warehouse business. The strike in local metalworking shops has reduced demand for light plates and sheets. Inventories are generally well rounded. With two exceptions all items are in ample supply, heavy plates and wide flange sections still being more or less scarce. No foreign steel is reported enroute to this area. Local prices are firm.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 184

Chicago—Demand for foundry coke continues unchanged as requirements for castings show only slight increase. Farm implement needs are looking up moderately for some companies.

Wire . . .

Wire Prices, Page 168

Boston—Ability of wire mills to make prompt shipment enables consumers to buy close to requirements. As a result forward orders are lacking. Finishing departments for numerous wire products will not be filled this month and March orders are coming in slowly except for mild improvement in automotive buying. Volume of cold-heading wire demand shows slight signs of recovery, but it is substantially below first quarter tonnage placed in recent years.

Buffalo—The Buffalo Steel Division, H. K. Porter Co., Tonawanda, N. Y., is introducing a line of light weight steel end, gate, intermediate and corner fence posts made of high strength rail steel.

Pittsburgh — Seasonal influences cause sales gains in merchant wire, as property owners make improvements. Manufacturers wire demand is generally slow.

Sheetmakers Awaiting Buying Spurt

Consumer caution in placing orders continues but gains are noted in some market areas. March volume is expected to better that entertained during January and February

Sheet and Strip Prices, Page 166 & 167

Boston — Several narrow carbon cold-rolled strip converters have reduced prices $2 to $4 per ton, .40 carbon and under, to 6.10c mill. One interest has gone to 5.90c, equalizing with the New Haven, Conn., base. While revised prices narrow spreads there are still differentials between the various grades, including high carbon spring steel.

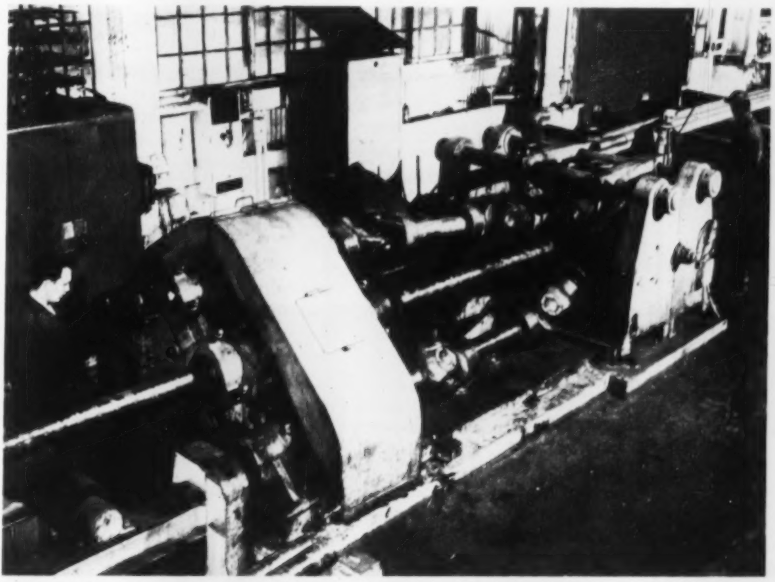
February flat-rolled schedules are not filled to capacity. While some spot tonnage can be worked in for shipment this month, most orders are now for March delivery with buying hand-to-mouth.

Stanley Works, effective Feb. 1, reduced prices on hot-rolled carbon strip $4 per ton to 3.95c, Pittsburgh; $6 per ton on cold-rolled strip (.25 carbon and under) to 5.45c, Pittsburgh, and $6 per ton on cold-rolled carbon spring steel (.26 to .40 carbon) to 5.45c, Pittsburgh. It also effected reductions of $4 per ton on carbon products in the hot-rolled plate and hot-rolled bar classifications.

New York—Cold-rolled sheet specifications for March have picked up at a rate sufficiently good to encourage producers to look for a better volume in that month than in February, though they do not anticipate full rolling schedules. Galvanized sheet business is improving. Some producers have full schedules for February and see a still better month ahead in March.

Philadelphia—Reduction of $4 to $5 a ton in the quality extra on rimmed steel is being increasingly applied. However, on special killed drawing steel the quality extra remains at $9. The country's leading producer is applying this revision to hot-rolled, cold-rolled, galvanized, long ternes, vitrenamel and to hot strip. Most companies selling in this area have taken similar action on such sheet items as they produce, and those who have not, certain midwestern makers, indicate they probably will.

Pittsburgh—Reductions in auto building cause short term concern over sales. Outlook for February is disappointing. Shipments will prob-



West Coast Plant Rolling 4¾-in. Rounds

This Medart-straightener, recently installed in Bethlehem Pacific Coast Steel Corp.'s plant in Seattle, is shown here straightening 4¾-in. rounds. As each round is forced slowly through the machine, two tilted and slightly concave rolls exert terrific pressure on it, straightening any bending which might have occurred in the rolling mill. These rolls lie parallel with the round, which means that their rotation forces the round to rotate as it is being straightened

This Moving World

...How about Malleable?

Toughness . . . Ductility
. . . Impact Resistance
in Easily Machined Castings

Malleable iron is a cast ferrous alloy heat treated to a remarkable combination of toughness, strength, ductility and machinability. It can be cast close to final form and, unlike most cast material, can be further formed by press or coining operations greatly reducing machining cost. Holes often can be punched eliminating expensive drilling operations.

Whether you are designing new products or reviewing current production it will pay you to consider malleable. Call a malleable foundry and have their engineers go over your parts with you. They can give you information and suggestions to help you design better products that can be made at lower cost.

Send for "Malleable Iron Facts" useful information on Malleable properties and uses.

Schedule a showing of the Malleable Founders' Society Technicolor sound film, "This Moving World". The story of Malleable Iron — how it is made, tested and used. Available on request to groups of production men, engineers, students or others.

Ask your malleable castings supplier
or write to the Malleable Founders' Society,
Union Commerce Building,
Cleveland 14, Ohio

Malleable FOUNDERS' SOCIETY

1800 Union Commerce Building Cleveland 14, Ohio

ably fall below January, with March slightly higher.

Due to more competitive conditions, U. S. Steel Corp. established a new extra on drawing grade sheet steel for moderate types of drawing operations. Extra will be $5 per ton for this grade, compared with an extra of $9 per ton previously quoted for all grades of drawing steel.

Cleveland — Not much change is noted in sheet market conditions. Expectations that March demand will better that of January and February continue to be expressed by the mills, but it is patent that it is more hope than certainty such will prove to be the case. Actually, consumers continue to order sparingly and with relatively prompt shipments available are disinclined to build much in the way of inventory.

Cincinnati—The principal producer here is looking forward to some improvement in demand for flat rolled. Encouragement has been coming from the warehouse level.

Chicago—It isn't typical, of course, but some mills consider themselves overbooked for cold-rolled sheets in first quarter. It is not true for hot-rolled or any other sheet or strip item. Galvanized sheets hold at stronger level than had been anticipated.

St. Louis—Inflow of sheet specifications on outstanding orders is picking up noticeably, indicating consumers have reconciled inventories and are trying to get back in balance. Producers have a backlog through first quarter.

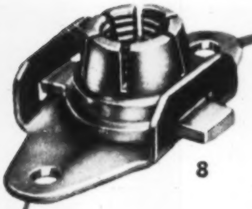
Steel Bars . . .

Bar Prices, Page 166

Cleveland—Little, if any, quickening in demand for bars is noted here. Consumers are ordering against needs in sight and the belief persists among sellers that inventories have not yet been liquidated to the point renewed buying is necessary. The fact that manufacturing operations are down noticeably from the pace of a few months past obviously serves to extend the period of inventory liquidation. Hope persists that March volume will show some improvement over that of the preceding two months of the quarter.

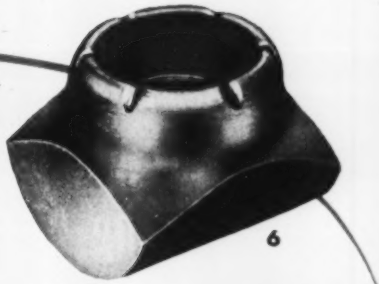
Boston—Supply of all grades of bars is well in excess of demand. February capacity is not taken up and more tonnage is offered from mill stocks. Bar consumers are carrying smaller inventories and stress early delivery in placing fill-in orders. Screw machine sizes are in ample supply, including resulphurized grades.

New York — Little variation is



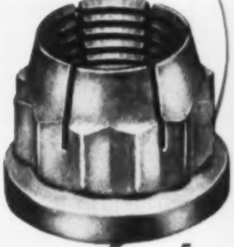
8

7



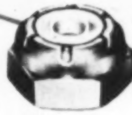
6

Can you use these new self-locking Nuts?

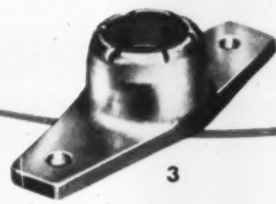


5

1



2



3

4

Designed for special applications . . . Do they suggest solutions to *your* design problems?

1 **TWO-LUG INVERTED ANCHOR NUT** For use where clearance or other considerations make it necessary to mount the nut upside down. Clearance hole must be provided for the barrel. Nylon inserts.

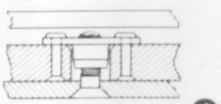
2 **LIGHT HEX NUT, KEL-F INSERT** Special KEL-F insert provides the self-locking, vibration-proof features of all ELASTIC STOP® nuts, for operation under extremely corrosive conditions—or exposed to strong acids—such as fuming nitric.

3 **TWO-LUG HIGH-TENSILE ANCHOR NUT** For use with 160,000 psi bolts, in blind mounting or in applications where ease of maintenance makes an attached nut desirable. Nylon inserts.

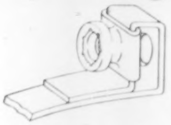
4 **SELF-LOCKING CLAMP NUT** For installation around the clamp leg, or on slotted strips where a random lengthwise positioning of the nut is necessary. Red nylon locking insert.

5 **HIGH-TEMPERATURE, CLOSE CLEARANCE DOUBLE-HEX NUT** For applications where weight, wrenching area and elevated temperatures are all major considerations. Temperatures to 1200° F.

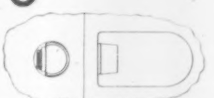
①



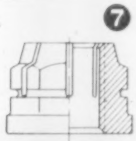
④



⑥



⑦



6 **LIGHTWEIGHT BARREL NUT** Barrel nuts permit the use of lighter forgings—and simplify machining. "Bathtub" type recesses are necessary for the bolt head only, since the barrel nut fits into regular drilled hole. Wrenching is simplified because the nut cannot turn. This is a lightweight version of the ESNA high-tensile barrel nut, for 160,000 psi bolts. Nylon inserts.

7 **ACCESSORY MOUNTING NUT** High-temperature nut for mounting generators or similar accessories having a keyhole-type mounting flange. Large base diameter compensates for seating area lost to slot in flange. Nut straddles slot without Brinnelling the flange. Temperature to 550° F.

8 **HIGH-TEMPERATURE FLOATING-BASKET ANCHOR NUT** Specially designed for applications where a lesser degree of accuracy in alignment of nut and bolt hole is desirable. To 1200° F.

Mail coupon for design information

ESNA

ELASTIC STOP NUT CORPORATION OF AMERICA

Dept. N48-260, Elastic Stop Nut Corporation of America
2330 Vauxhall Road, Union, New Jersey

Please send details on the following fasteners:

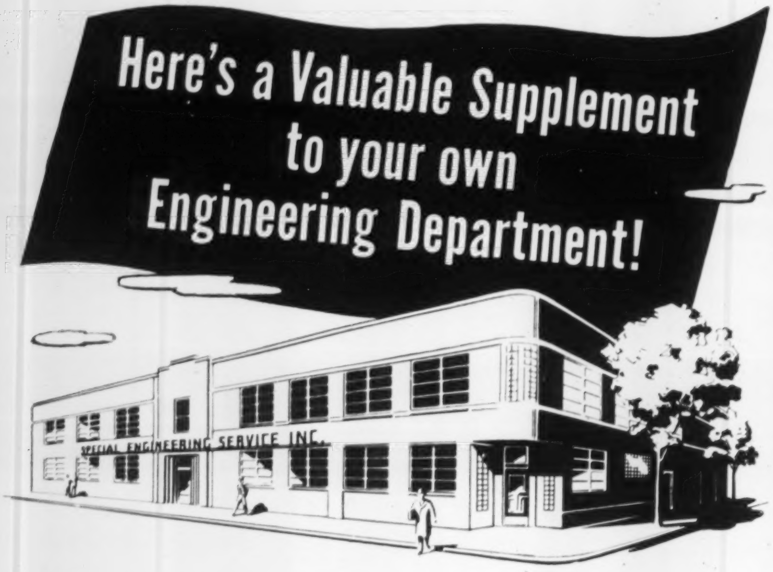
☐ 1 ☐ 3 ☐ 5 ☐ 7 ☐ Here is a drawing of our product. What self-locking fastener do you suggest?
☐ 2 ☐ 4 ☐ 6 ☐ 8

Name________________ Title________

Firm________________

Street________________

City________________ Zone______ State________


Here's a Valuable Supplement to your own Engineering Department!
SPECIAL ENGINEERING SERVICE INC.

Yes, here is the talent you need, when you need it, to supplement and assist your existing engineering facilities without adding one penny to your present overhead! And your assurance of satisfaction is our record of fifteen years' steady growth and progress.

DESIGN SERVICES

Tool and Die
Jig and Fixture
Special Machines
Gauges
Die Cast Dies

PRODUCT SERVICES

Design
Development
Survey
Illustration

PLANT SERVICES

Automation
Processing
Plant Layout
Machine and Equipment Surveys

ASSISTING SERVICES

Tool Procurement
Expediting
Inspection

Our company's stability, along with a progressive profit sharing plan, has attracted a large staff of versatile engineers who have skill and practical experience in both tool design and application, as well as in modern production methods. Our constant aim is close cooperation with your personnel. The result we seek is to help them develop the product, tooling method or production operation which will turn the most profit for you. Also of value to you is our reputation for prompt service. In fact, our company plane will fly staff members right to your plant for consultation *within hours after you request it!*

LIKE TO KNOW US BETTER?

This informative brochure will serve to acquaint you with our complete facilities and services. Please write for your free copy. We also manufacture "SESCO" tool room accessories and press room equipment. Literature on these products will also be sent to you without obligation.

HEADQUARTERS
for SPECIAL ENGINEERING SERVICE

SPECIAL ENGINEERING SERVICE, INC.

8163 LIVERNOIS AVE. • DETROIT 4, MICHIGAN

PROFIT AND SAVE TIME

E S S

WITH METHODS AND DESIGN

Telephone:
TExas 4-8700

noted in demand for carbon bars. Specifications are on a limited scale, but are holding their own. February rollings are expected to be on a parity with January. Producers hope for some gain in March, but say it is too early to make definite predictions.

Carbon bars in all sizes and shapes are available for relatively early shipment. Some tonnage can be placed for rolling this month.

Base prices are steady, but freight absorption is being practiced on an increasing scale.

Philadelphia—While still easy, bar inquiry is fairly steady. Production this month may be off a shade from January, but specifications for March encourage the belief daily volume should at least hold, which would mean actual rollings in March should be heavier because of the extra working days. However, producers are keeping their fingers crossed.

Pittsburgh—Defense contracts are causing some tightness in large diameter bars, although defense demand is generally low. Lower rate of cancellations may cause a slight increase in shipments this month.

Cincinnati—Distributors of carbon bars report February is not lining up as well as January, while alloy bar men feel their business is holding up as well as in January. Stocks are plentiful.

Tubular Goods . . .

Tubular Goods Prices, Page 169

Boston—With demand lagging, more merchant pipe, notably in smaller sizes, can be shipped promptly from mill stocks. This permits producers to keep books open for February delivery. Distributor sales are slow, but direct shipments on commission show spotty improvement. Utilities, airfield base installations and 210 tons, 20-inch seamless, Groton, Conn., shipyard, account for bulk of direct shipment tonnage.

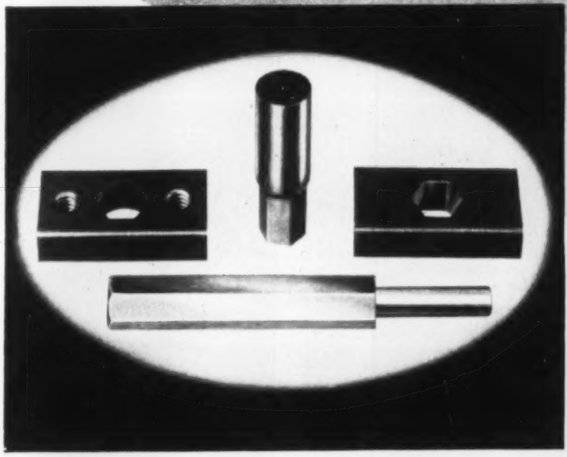
Practically all mills serving this area are absorbing some freight.

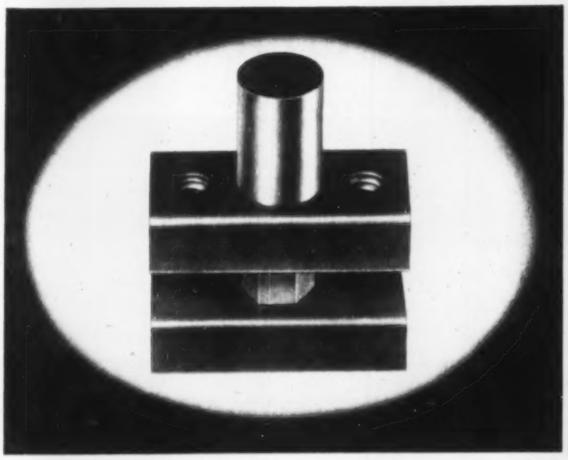
Cast pipe deliveries are 30 days and under. Seasonal improvement in cast approaches as municipal appropriations usually come in March.

New York—Merchant pipe demand is seasonally at bottom, with little chance of material pickup before March, when building construction should begin to set in more actively. Meanwhile, resellers continue to sell at concessions.

Pittsburgh—Producers expect leveling-off in demand for seamless tubing for oil country use to occur in third quarter. Order books are near-

Can You Make This Punch, Die and Stripper Plate Out of Tungsten Carbide for





$ 35 50 ✦

In Your Plant

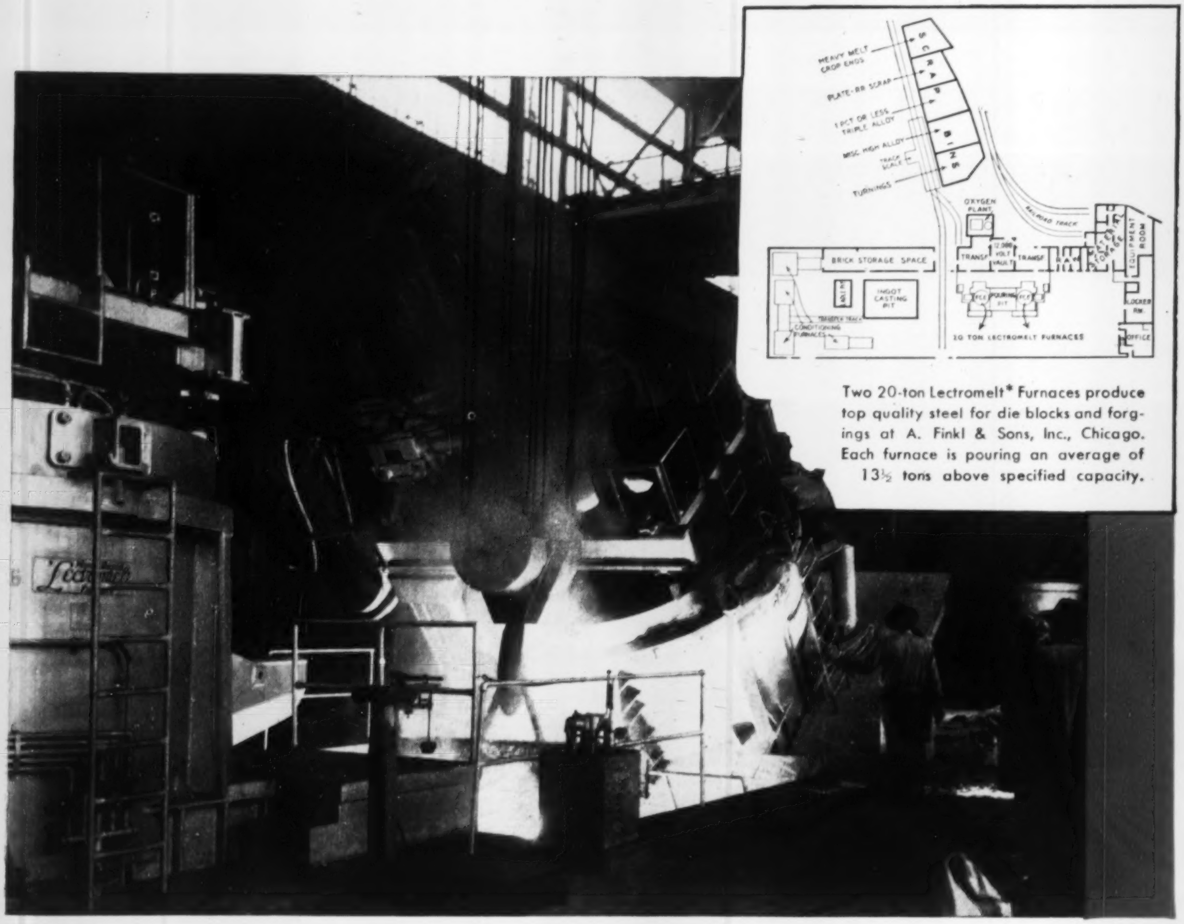
*

Electrode manufacturing time	2 hours
Cutting time on die	½ hour
Cutting time on stripper	½ hour
Cutting time on punch	½ hour
Accumulated setup time	1 hour
TOTAL LABOR TIME:	4½ Hours
Cost of Tungsten Carbide material:	$22.00

elox ◀ we will show you how

corporation of michigan

722 N. ROCHESTER RD. • CLAWSON, MICHIGAN


MEAVY MELT CROP ENDS
PLATE-RR SCRAP
1 PCT OR LESS TRIPLE ALLOY
MISC HIGH ALLOY
TRACK SCALE
TURNINGS
SCRAP BINS
OXYGEN PLANT
RAILROAD TRACK
BRICK STORAGE SPACE
INGOT CASTING PIT
TRANSFER TRACK
CONDITIONING FURNACES
TRANSF
12,000 VOLT VAULT
TRANSF
POURING PIT
FCE
FCE
20 TON LECTROMELT FURNACES
EQUIPMENT ROOM
LOCKER RM.
OFFICE
Lectromelt

Two 20-ton Lectromelt* Furnaces produce top quality steel for die blocks and forgings at A. Finkl & Sons, Inc., Chicago. Each furnace is pouring an average of 13½ tons above specified capacity.

rated at 20 tons, *Averaging 33½ tons*
in Finkl's new melt shop!

"They're sturdy," says Dave Hughes, Finkl's Melt Shop Superintendent, "so we felt safe in boosting the output of these two 20-ton Lectromelt Furnaces to as high as 40 tons. Our monthly average has been 33½ tons."

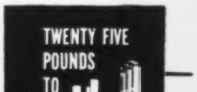
Finkl's Lectromelt Furnaces top-charge in 6 minutes . . . pour heats in 3½ to 4½ hours. Downtime between heats is only 25 minutes.

Your furnaces are the heart of your melting, smelting or reduction operation. They can be sturdy and dependable. Write for Bulletin No. 9 describing Lectromelt Furnace operation. The Pittsburgh Lectromelt Furnace Corporation, 323 32nd Street, Pittsburgh 30, Pennsylvania.

Manufactured in . . . CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2 . . . ENGLAND: Birlec, Ltd., Birmingham . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege . . . SPAIN: General Electrica Espanola, Bilbao . . . ITALY: Forni Stein, Genoa. JAPAN: Daido Steel Co., Ltd., Nagoya

*REG. T. M. U. S. PAT. OFF.

MOORE RAPID
WHEN YOU MELT... *Lectromelt*


TWENTY FIVE POUNDS TO
ONE HUNDRED FIFTY TONS CAPACITY

ly filled for second quarter, but more competitive conditions will prevail later.

Seattle — Interest in pipe is increasing as the season advances. Spokane placed 500 tons while two districts in the Seattle area are asking bids for both cast iron and alternatives.

Tin Plate . . .

Tin Plate Prices, Page 168

New York—Inquiry for tin plate is seasonally on the upgrade, a trend likely to continue well into third quarter. Effects of strikes at plants of the two leading can makers late last year, started early in January, are gradually wearing off.

Pittsburgh — Can companies are cautious about building inventories of tin plate too high. Mill shipments are increasing, but at a slower rate than was expected last month.

Los Angeles—Kaiser Steel Corp., Fontana Works, is booked for 94 per cent of its total tin plate production capacity this year.

Semifinished Steel . . .

Semifinished Prices, Page 166

Youngstown—The Republic Steel Corp.'s Youngstown plant has started up two more open hearths, the first increase in operations in several months. This represents a better volume of orders. Company is operating 9 of 15 units at Youngstown, and 7 of 8 at the Warren plant.

Youngstown Sheet & Tube Co. is overhauling what is believed to be the oldest, fastest and most powerful blooming mill steam engine in the world. The unit powers the Brier Hill Works 40 inch blooming mill which is being torn out and will be replaced by a 44-inch mill. The steam engine will be retained for the new mill.

The engine was built in 1913 by the William Tod Co., now part of United Engineering & Foundry Co. The old engine powered the mill for rolling 21,100,000 tons of ingots.

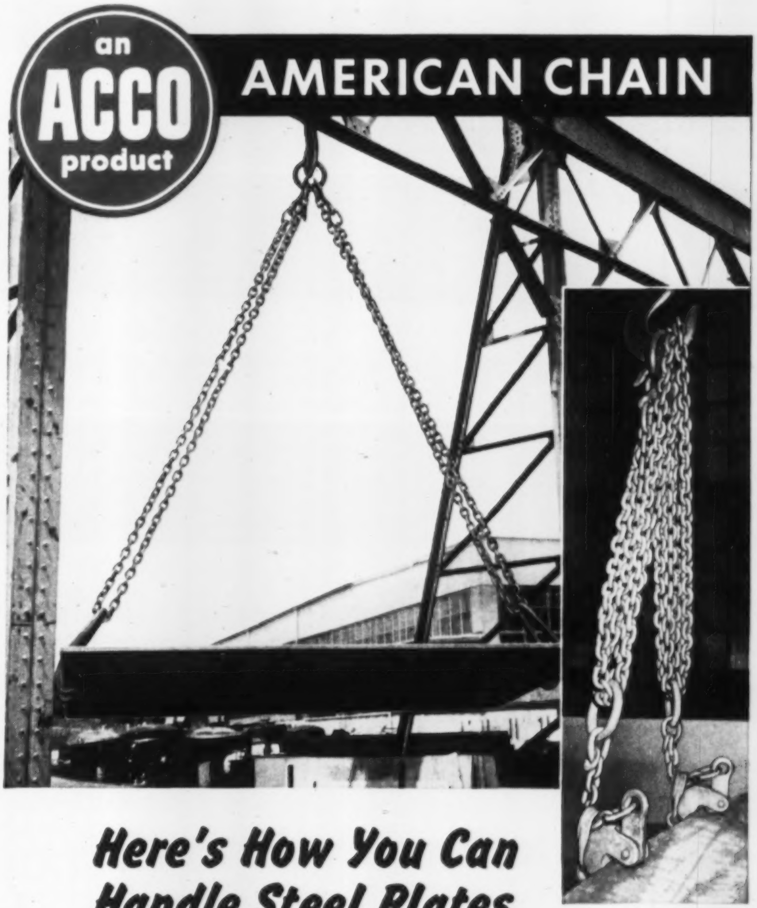
Pittsburgh—Steelmaking operations quickened in this area as U. S. Steel Corp. returned four open hearth furnaces to production. Declining demand had idled the furnaces—two at the corporation's Duquesne, Pa., works and two at American Steel & Wire Division's Donora, Pa., plant.

Seven furnaces are now in operation out of 12 at the Duquesne works. The Donora works, which normally operates 10 or 11 of its 13 open hearths, now has 9 in operation.

Chicago—Wisconsin Steel Works of International Harvester Co. was closed last week by an unauthorized

an ACCO product

AMERICAN CHAIN



Here's How You Can Handle Steel Plates

• These pictures show only two applications of an AMERICAN 125 Endweldur alloy ACCO *Registered* Sling Chain with ACCO series 80 Sling Hooks. The 2 legs are long enough for use with various length plates. They can also be used in a double-basket hitch for lifting two or more plates together.

The big advantage in using this AMERICAN Chain is in the small diameter, light weight, and great strength of the tough alloy chain, and in the short links which make the chain so flexible and easy to rig. See it in the right hand picture above.

Inside the plant this same sling chain is used in a wide variety of lifts on castings, housings, and finished machines. It has become sort of a "jack-of-all-trades."

AMERICAN makes sling chains for every use with ACCO grab, sling, foundry, and special hooks. Note (*above*) the two ACCO *Registered* Sling Chains on the plate grabs. The ACCO Sling Chain Catalog gives you full information on America's finest chain slings—AMERICAN.

***Write** to our York, Pa., office today for Catalog DH-314*

ACCO

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

American Chain

strike of its Progressive Steel Workers Union, an independent organization. The work stoppage started as a sick strike on the blooming mill with the first shift Feb. 8. A job reclassification is the basis for the disagreement. Only operations are coke ovens and two of three blast furnaces. This is the first strike by the union since a five-day walkout in 1947.

Scrap . . .

Scrap Prices, Page 192

Philadelphia—Steel scrap has undergone another decline, major open hearth grades being off $1 a ton. No. 1 heavy melting steel, based on a large purchase, is now $26 delivered consumer plant, with No. 1 bundles and No. 1 busheling off sympathetically to a similar level. No. 2 heavy melting is down $1 to $23, and No. 2 bundles to $21.

Electric furnace bundles are nominally lower at $28, machine shop turnings and mixed borings and turnings are off $2 to $14 and $16, delivered, respectively. Short shovel turnings are down $1 to $20, and heavy turnings similarly to $24. Low phos structurals and plate are now $31, against a spread previously of $31 to $32. Couplers, springs and wheels are weak but unchanged at $33, and rail crops, 2 feet and under, at $40 to $41.

In the cast grades the only change is on No. 1 cupola, which is now $34 to $35 compared with $33 to $35, delivered consumer, a week ago.

New York—Trading in steel scrap is profoundly dull with prices purely nominal, except on short shovel turnings. In this material there has been some light trading, with brokers reducing their buying prices $2 a ton to a range of $9 to $10. Cast grades are holding steady on limited trading.

While 18-8 sheets, clips and solids are unchanged at $160-$165, brokers' buying prices on the chrome grades have taken a nose-dive. For some time prices on the 430 and 410 grades of sheets, clips and solids have been purely nominal, with brokers out of the market for the reason they have had no place to put the material. However, there recently has been just enough trading to send the 430 grade down to $50 and 410 to $40. There are some indications that even less might be done, but until the situation becomes clearer, it will be difficult to establish the true position of the market.

Continued strength in 18-8 sheets, clips and solids reflects demand for nickel bearing scrap, particularly in the form of solids. This is also seen to some extent in the demand for 18-8 borings and turnings, although prices, comparatively, are less strong. Actually, brokers can pick up fair quantities around $80 to $85, which is off from a week ago.

Buffalo—Principal interest in the scrap market during the week centered on sale of short shoveling turnings by a leading automotive interest to a broker at prices considerably above prevailing market quotations. However, prices are nominally unchanged as leading mills still refuse to bid above current price ranges which dealers decline to accept. No new business is reported in steelmaking grades.

Boston—Lack of buying gives little support to higher steel scrap prices, at low point since government controls were lifted. Steel ingot operations are well below the national average in this area and one works was down entirely the week of Feb. 8.

Pittsburgh—Steelmaking operations here have remained level for three weeks. With little prospect for increasing activity in February, demand for scrap remains at low level with prices unchanged. Some industry sources expect prices to drop further before mills make volume purchases.

Cleveland—With consumer buying virtually absent scrap prices continue to decline. Steelmaking grades are off another $1 per ton though quotations are largely nominal in the absence of sales. Further decline is indicated with dealer scrap moving so sluggishly something of a crisis is seen developing in the scrap industry.

Railroad heavy melting is reported moving at a range of $28 to $30, one list closing recently at $28.50 and another at $30. These relatively high prices are surprising to scrap men who say they offered railroad scrap to the mills at lower prices.

Sufficient industrial scrap is moving to the mills to keep the latter's stockpiles replenished at the current sluggish rate of steelmaking operations.

Detroit—Activity still continues nil in the scrap market here. Sales are in small quantities, making accurate pricing difficult. Scrap men in the area report most steelmakers are using more hot metal in preference to scrap. This is contributing a depressing influence on scrap prices.

Chicago—Dealer scrap is depressed and devoid of encouragement. Yards are limiting their intake and offering less for their acquisitions. Prices are holding steady on steel-

NON-FLUID OIL
TRADE MARK REGISTERED

WILL NOT SEPARATE IN PRESSURE SYSTEMS

NON-FLUID OIL is perfect for pressure lubrication because it can't dry out like ordinary greases and won't separate under pressure. Ordinary greases will choke your pressure system, but NON-FLUID OIL contains nothing of a residual nature that can clog fittings and allow bearings to run dry.

NON-FLUID OIL lubricates all the way, until entirely consumed. Specify NON-FLUID OIL and cut down lubricant and application costs—it lasts longer and costs less in the end.

Write for instructive bulletin and free testing sample of NON-FLUID OIL.

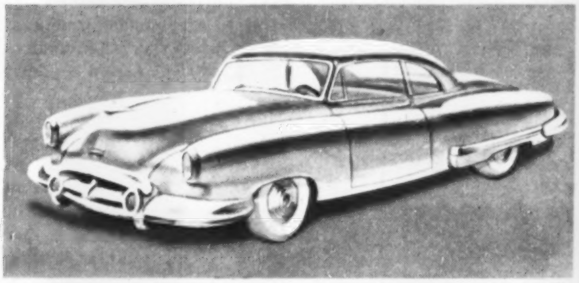
NEW YORK & NEW JERSEY LUBRICANT COMPANY
292 Madison Ave., New York 17, N. Y. • WORKS: Newark, N. J.

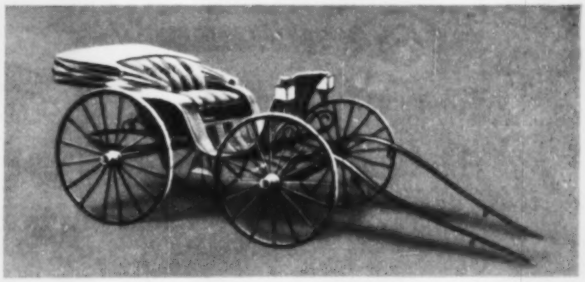
SOUTHERN DISTRICT MANAGER: Lewis W. Thomason, Jr., Charlotte, N. C.

WAREHOUSES: Birmingham, Ala. • Atlanta, Ga. • Columbus, Ga. • Charlotte, N. C. Greensboro, N. C. • Greenville, S. C. • Chicago, Ill. • Springfield, Mass. • Detroit, Mich. • St. Louis, Mo. • Providence, R. I.

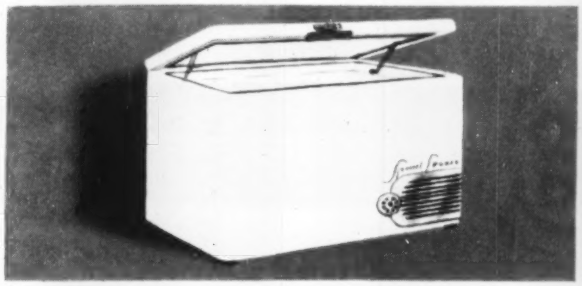
NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture.

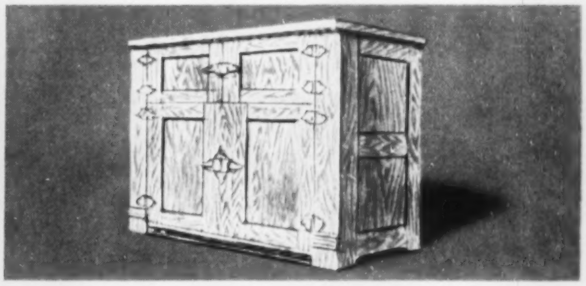
With the help of Advertising



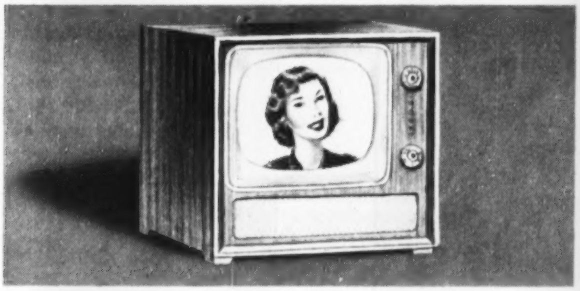


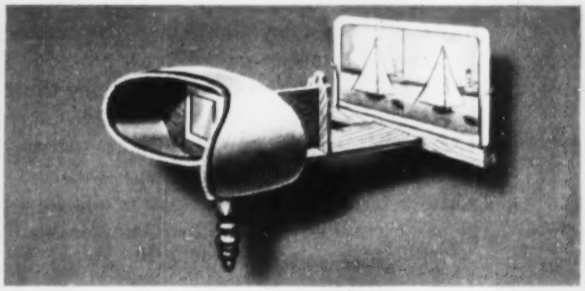
You have this . . . . *Instead of this*





You have this . . . . *Instead of this*





You have this . . . . *Instead of this*

Advertising Benefits Everyone

The credit for the many wonderful products of our "American Way of Life" must be *divided*. The Inventor, the Investor, the Businessman, the Worker—all rightfully share that credit. **BUT** . . . it is *Advertising* that tells the story of the product; it is *Advertising* that whets public appetite for the product; and it is *Advertising* that helps sell the product. **AND** . . . the more product-demand that Advertising builds, the more products must be manufactured That means Mass-Production which, in turn, means better products at lower prices. In short, a *still higher* American living standard. **SO** . . . *everyone* benefits. Industry, Business, Labor, Agriculture. But, most important of all, YOU the citizen.
And all with the help of Advertising!

ADVERTISING FEDERATION OF AMERICA *and* ADVERTISING ASSOCIATION OF THE WEST • *(Prepared by the Cleveland Advertising Club)*

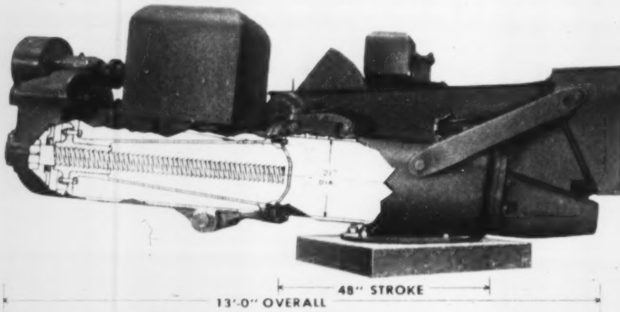
The Power you need

FOR UNIFORM LONG TAP HOLES

Bailey ENGINEERS

CLAY GUN

Power, precision and safety in plugging blast furnace tapping holes are secured with the Bailey Clay Gun. The powerful, motor-driven screw provides the piston pressure necessary for maintaining long tapping holes. The Gun is supported from a pedestal by heavy linkage, and is swung into position by a positive motor drive which forces the nose into position with unfailing accuracy. Hundreds of installations testify to the safety and dependability of the Bailey Clay Gun.



WILLIAM M. Bailey COMPANY
ENGINEERS
LEADERSHIP THROUGH QUALITY
1221 BANKSVILLE ROAD
PITTSBURGH 16, PA.

making grades of industrial origin but turnings and borings have slipped another $1 per ton in a small sale. Some railroad grades are off $1 to $2 a ton.

Steelmaking rate holds steady at 83.5 per cent of capacity, equivalent to 90 per cent on last year's capacity figure.

St. Louis—Speculative stockpiling among scrap dealers is mounting as prices continue to soften, indicating some hope exists for an upturn. This is especially true in rail items. Much of the market inertia is due to low mill operations, which hit a postwar bottom, except for strike periods, of 35.5 per cent of capacity last week.

Birmingham—Dealers and brokers report little activity in scrap with practically no local market and not a great deal of scrap moving to other points. Prices remain weak.

Los Angeles — Local scrap is abundant and mill buying is limited. Undertone of the market for steelmaking scrap is weaker and further price reductions are likely.

San Francisco—Steel scrap is moving slowly. The Feb. 1 postings of lowered prices have failed to bring out buyers in volume and demand continues highly selective. Cast grades are moving steadily at firm prices.

Seattle—The steel scrap market dropped $2 last week, the result of reduced buying by larger consumers and surplus stocks. New quotations are $25 for No. 1 heavy melting, $21 for No. 2 and $16 for No. 2 bundles. Sales of turnings were reported at $11.50. The cast iron market is firmer than steel, stove plate still being quoted at $29.

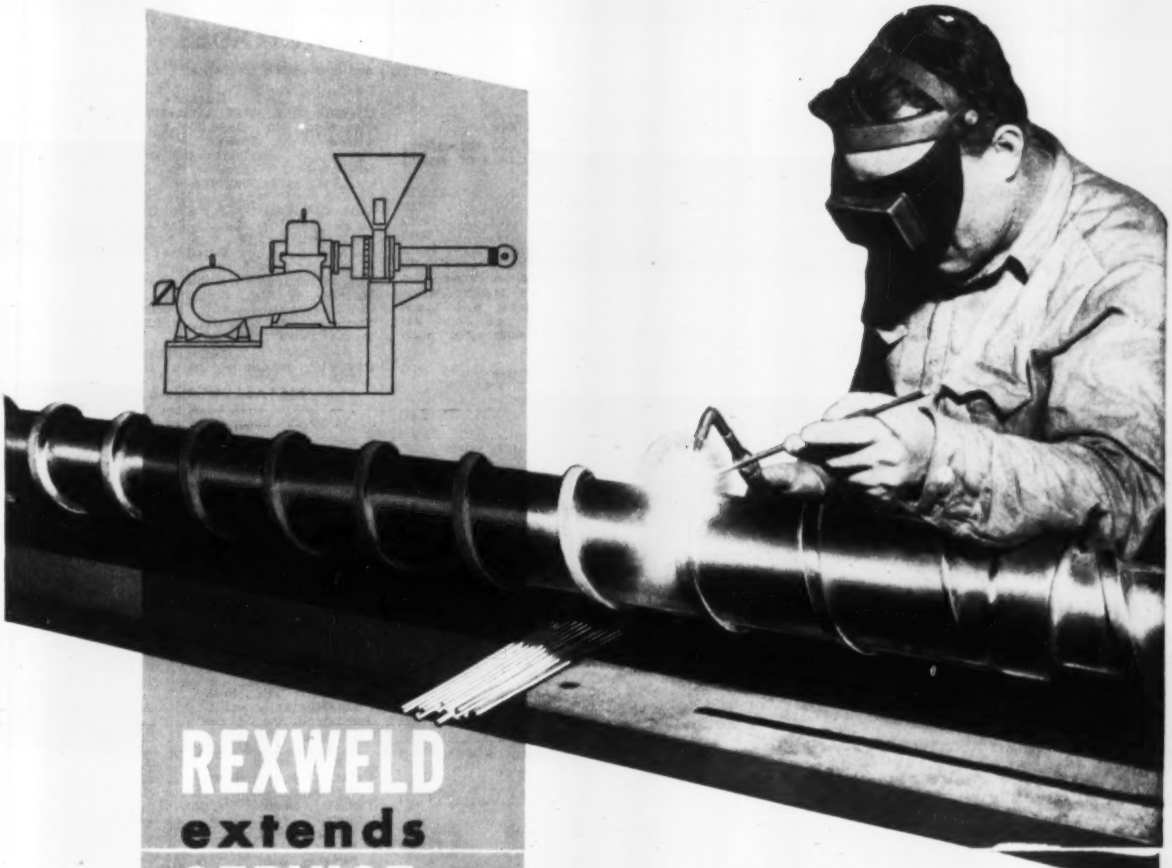
Plates . . .

Plate Prices, Page 166

Philadelphia—Mill shipments of plates can still be obtained on relatively short notice and with small improvement in demand for fabricated products consumers are specifying slowly and on a limited basis. Only one plate mill in the immediate area is operating near capacity, although production generally for the nearby mills will likely show a slight gain for the month, and March, being longer and ushering in the spring season, should show further improvement.

Fabricators of underground and outside tanks should become more active, and fabricated pipe business should perk up. The fabricated pipe department of one district plate mill is now booked up to August, after experiencing lean times for several months.

Lukens Steel Co., Coatesville, Pa.,



REXWELD extends SERVICE LIFE of Hartig extruder feed screws by 400%

Here is a typical case of how REXWELD Hard Surfacing Rods are used to extend tool and product life . . . to provide a better, crack and porosity free surface that wears longer.

One of the most important parts of the plastic extrusion machines made by the Hartig Engine and Machine Company is the *feed screw*. This part propels heated plastic through an extrusion die under great pressures, and at rates as high as 2000 pounds per hour. Because the slightest amount of wear on the screw is so critical – on some jobs more than 0.010″ means replacement – Hartig hardfaces them with REXWELD C by the oxyacetylene process.

The Hartig people have found that REXWELD C extends the life of the screws 400% over unsurfaced screws . . . provides a surface that resists abrasion and corrosion . . . and gives them a dense facing free from surface imperfections – an important factor from the standpoint of product contamination.

Next time you have a hard surfacing job which requires the best in service life and ease of application, ask for REXWELD Hard Surfacing Rods. They are available in many different grades and sizes, and in electrodes bearing the special REXWELD low hydrogen coating.

CRUCIBLE

54 *years of* *Fine* *steelmaking*

REXWELD HARD SURFACING ROD

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REZISTAL STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

To Your EXACT Specifications . . .

TOSCO

SWAGING MACHINE DIES and TUBE MILL ROLLS

for all makes of tube mills

YEARS OF MANUFACTURING EXPERIENCE

MAXIMUM PRODUCTION RATES

LOW COST

FAST DELIVERY

Let us quote on your new tube mill rolls!

TOLEDO STEEL ROLL CO.
1024 CUSTER DR. TOLEDO, OHIO

EFFICIENT PICKLING WITH

TRADE MARK

RODINE

REG. U. S. PAT. OFF

PICKLING ACID INHIBITORS

SAVES ACID
SAVES STEEL
SAVES MONEY

Use "RODINE" for improved pickling and increased production!

"RODINE" meets Government Specification No. U.S.N. 51-I-2.

ACP Write for Descriptive Folder ACP

AMERICAN CHEMICAL PAINT CO.
AMBLER, PA.

ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in italics.

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%	22.00
North African hematite (spot)	20.00-22.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, before duty

Foreign Wolframite min. 60%, WO_3	23.80
Domestic scheelite, mine	63.00

Manganese Ore

Mn, 48% nearby, $1.12 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; 46-47%, $1.05-$1.07.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.:

Indian and African

48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$24.00-$26.00
48% no ratio	34.00

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb, Mb content mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

50-60%	$2.40-$2.80
65% min.	$3.40-$3.50

Vanadium Ore

Cents per lb. V_2O_5 content, deld. mills

Domestic	31.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109; Salina, Pa., $114; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115; Warren, O., Hays, Pa., $120; Niles, O., $120; E. Chicago, Ind., Joliet, Rockdale, Ill., $125; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° F: Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $174; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 Per Cent: Clearfield, Pa., St. Louis, Mexico, Mo., $179; Danville, Ill., $169.30.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $225; Danville, Ill., $258; Clearfield, Pa., $252.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $14.60; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearney, N. J., ovens	$24.00
Everett, Mass., ovens	
New England, deld.	*26.00
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis ovens	24.25
Chicago, deld.	28.12
Cincinnati, deld.	25.85
Painesville, O., ovens	[illegible]
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Buffalo, deld.	28.08
Flint, deld.	28.23
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	40.00
Toluol, one deg.	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$44-47
Birmingham area	$45.00†

† With port equalization against imports.

Cents per pound, producing point

Phenol, 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

FLUORSPAR

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38. Imported, net ton, duty paid, metallurgical grade, $35-$36.

ELECTRODES

(Threaded with nipple, unboxed f.o.b. plant)

Inches		Per
Diam.	Length	100 lb
GRAPHITE		
2	24	$43.50
2½	30	28.00
3	40	27.25
4	40	26.00
5½	40	25.75
6	60	23.25
7, 8, 9, 10	60	21.00
12, 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.50
20	72	20.00
CARBON		
40	100	$8.95
40, 35, 30	110	8.95
30	84	9.10
24	96	8.90
24	72, 84	9.10
20	90	8.95
20	84	9.10
17	72	9.10
17	60	9.50
14	72	9.50
14, 12, 10	60	10.30
8	60	10.55

reduced carbon plate price $2 per ton to 4.10c per pound base, effective Feb. 9. Alan Wood Steel Co., Conshohocken, Pa., also reduced its price to 4.10c, in this case a drop of $3 per ton, while the Wickwire Spencer Steel Division, Colorado Fuel & Iron Corp., lowered its price at Claymont, Del., to 4.10c, a drop of $2. The lower prices bring quotations of these mills into line with those quoted by other eastern and midwestern producers.

Boston—New freight rates on steel products, including plates, plain or galvanized, boiler, structural and floor plates will be operative about Mar. 15. Lower delivered cost to fabricating shops and less freight absorption by shippers, will be around $2 per ton for some mileage brackets on 20-ton shipments and $1 per ton lower in each instance on 40-ton shipments.

New England rates from mill will be (40,000 pounds): 100 miles, 23.00c, present 36.80c; 250 miles 37.00c, present 50.60c; 300 miles 42.00c, present 58.70c; 400 miles 49.00c, present 66.70c; 500 miles 62.00c, present 77.10c; 600 miles 70.00c, present 82.80c. These are base rates per 100 pounds and include 15 per cent temporary increases, but not the 3 per cent federal tax.

Best delivery with some mills is now mid-March, but February capacity with others is not filled.

New York — Plate business lags, with some producers today still in position to take bookings for February rolling. Production this month may be off from January, as deferments are lighter.

Chicago—Plate fabricators are enjoying heavier operations than almost any other section of the metalworking industry. As a result, plate schedules are well maintained.

Canada . . .

Toronto, Ont.—Production of primary iron and steel shapes in Canada during October, 1953, amounted to 407,518 net tons against 290,700 in September and 410,405 in October, 1952. Production included 395,440 tons of carbon shapes and 12,078 tons of alloy shapes.

Output for the month included 117,978 tons for producers interchange, comparing with 122,137 in September and 131,551 in October of the preceding year.

Shipments for sale during October amounted to 291,387 net tons against 260,115 in September and 285,471 in October, 1952.

HERE ARE 2 REASONS WHY you can count on G. O. Carlson, Inc. for STAINLESS PLATE

the first is stock...
probably the largest stock of stainless plate in one location—produced to meet rigid chemical industry standards in a wide range of sizes, gauges and analyses.

the second is delivery...
the amount of diversified stock regularly carried at G. O. Carlson, Inc. assures fast delivery on all of the more active types and gauges.

and that's not all...
Special cutting equipment saves time and money where pattern cut stainless plate is required.
Highly skilled employees work on your orders—it's *right* when it comes from Carlson!
Complete-package orders—one order is sufficient for Carlson heads, rings, circles, flanges, forgings, bars and sheets (No. 1 Finish).

Why shop around... call Carlson first!

Stainless Steels Exclusively
G. O. CARLSON, INC.
Plates • Plate Products • Forgings • Bars • Sheets (No. 1 Finish)
THORNDALE, PENNSYLVANIA
District Sales Offices in Principal Cities

Titanium Metals Corp. Cuts Prices

Reductions of 12 to 14 per cent on sheet and plate quotations became effective as of Feb. 11. Savings from expanding output and greater efficiency are passed on to users

FIRST significant price reduction for titanium metal products, an average decline of over 12 per cent for commercially-pure sheet and plate, was made by Titanium Metals Corp., New York and Henderson, Nev., effective as of Feb. 11.

Other titanium metal producers are studying costs and are expected to revise their present schedules in the near future. The action and expected action come on the heels of a temporary easing in titanium supplies (STEEL, Feb. 8, p. 69).

Rapidly expanding production and continuous mill rolling of titanium sheet have forced costs progressively downward, TMC officials say. This cost improvement is being extended to all customers, the more prominent being the major builders of military airframes.

Sheet and Plate—New sheet and plate orders are being priced on the lower schedule. Further, some $2 million of sheet and plate business currently on the company's books is being immediately repriced downward in order to extend to all customers the benefit of the new lower prices.

This spectacular new metal, only three years out of the laboratory, is finding widespread application in the aircraft industry, particularly for advanced military aircraft. Leading military spokesmen have repeatedly emphasized the need for more and more titanium production to assure air supremacy in the future.

Revised price schedules issued by Titanium Metals Corp. of America, including certain extras, are in part as follows:

TITANIUM SHEETS
Extras in Dollars per Pound

Base Price: $15 per lb, f.o.b. Brackenridge, Pa.

Grades: Commercially-pure (Ti-75A) and Ti-100A titanium.

Thickness and Width Extras:

Ordering Range		Extra,
Thickness in Inches	**Width in Inches**	**$ per Pound**
0.012 to 0.15 incl.	24 to 36 incl.	6.75
Over 0.015 to 0.020 incl.	24 to 36 incl.	4.50
	Over 36 to 42	5.75
Over 0.020 to 0.025 incl	24 to 36 incl.	3.50
	Over 36 to 42 incl.	4.50
	Over 42 to 48	5.50
Over 0.025 to 0.032 incl	24 to 36 incl.	2.75
	Over 36 to 42 incl.	3.75
	Over 42 to 48	4.75
Over 0.032 to 0.040 incl	24 to 36 incl	2.25
	Over 36 to 42 incl.	3.25
	Over 42 to 48	4.25
Over 0.040 to 0.060 incl.	24 to 36 incl.	1.75
	Over 36 to 42 incl.	2.75
	Over 42 to 48	3.75
Over 0.060 to 0.125 incl	24 to 36 incl.	1.25
	Over 36 to 42 incl.	2.00
	Over 42 to 48	2.50
Over 0.125 to 0.187 incl.	24 to 36 incl.	0.75
	Over 36 to 42 incl.	1.50
	Over 42 to 48	2.00

Shearing Extras: Applies on sheets sheared to widths under 24 in.:

Size in Inches	Extra, $ per Pound
Under 24 to 6 incl.	0.50
Under 6 to 3 incl.	0.75
Under 3 to 1 incl.	1.00

Circles: Add 40 pct to price after all extras have been applied. Quantity extras for circles shall be based on the rectangular weight of the diameter of the circle.

Length Extras:

Ordering Length in Inches	Extra, $ per Pound
Up to 96 incl.	Base
Over 96 to 120 incl.	0.50
Over 120 to 132 incl.	1.00
Over 132	2.00

Quantity Extras: Quantity extras in dollars per pound are applicable to individual items of a grade, thickness, width and length ordered at one time for shipment at one time to one destination.

Ordering Weight in lb	Extra, $ per Pound
10,000 and over	Base
5,000 to 9,999	0.50
1,000 to 4,999	1.00
500 to 999	1.50
100 to 499	2.00
1 to 99	3.00

TITANIUM SHEARED MILL PLATE
Extras in Dollars per Pound

Base Price: $12 per lb, f.o.b. Brackenridge, Pa.

Grades: Commercially-pure (Ti-75A) and Ti-100A titanium—base price. Alloy grades (such as Ti-140A, Ti-150A, and Ti-155AX)—$1.00 per lb extra.

Thickness Extras:

Thickness Ordering Range in Inches	Extra, $ per Pound
3/16 to ¾ incl	1.00
Over ¾ to 1½ incl	0.50
Over 1½	Base

Width Extras:

Width Ordering Range in Inches	Extra, $ per Pound
Up to 24 incl.	0.75
Over 24 to 36 incl.	Base
Over 36 to 48 incl.	0.50
Over 48	1.50

Length Extras:

Length Ordering Range in Inches	Extra, $ per Pound
Up to 96 incl.	Base
Over 96 to 120 incl.	0.75
Over 120 to 144	1.25

Circles: Add 40 pct to price of plate after all extras have been applied. Quantity extra for circles shall be based on the rectangular weight of the diameter of the circle.

Quantity Extras: Quantity extras in dollars per pound are applicable to individual items of the same thickness, width, and length, ordered at one time for shipment at one time. Shipments may go to various destinations.

Ordering Weight in lb	Extra, $ per Pound
10,000 and over	Base
5,000 to 9,999	0.50
1,000 to 4,999	1.00
500 to 999	1.50
100 to 499	2.00
1 to 99	3.00

FERROALLOY PRICES

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton $200, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland, Oreg.; add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Current quotations on other ferroalloys are unchanged at levels published on page 192 of the Feb. 8 issue.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max, 0.15% C grade from above prices, 1c for max, 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min, **Fe** 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 31.5c; ton lots 33.5c; 250 to 1999 lb, 35.5c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-86%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

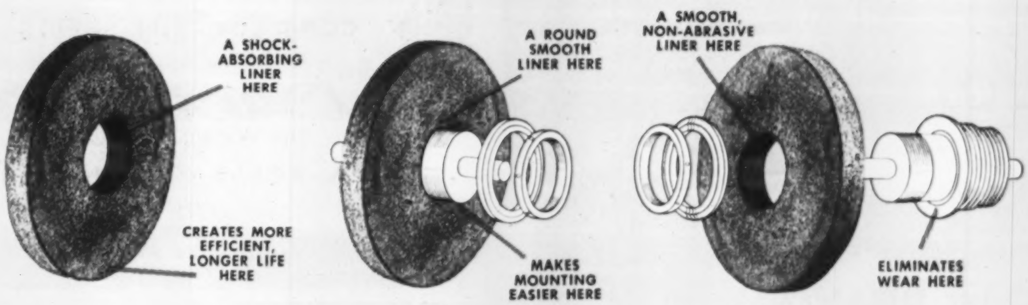
Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

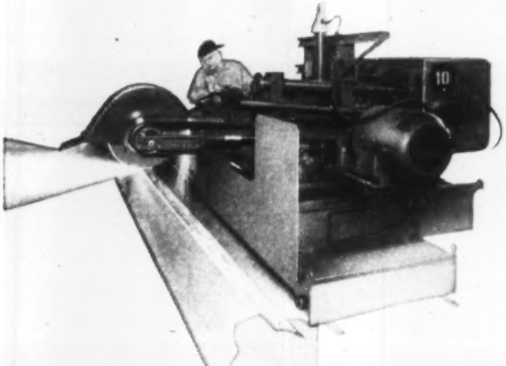
Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

For rugged conditioning jobs you can't beat...

MID-WEST FIBER-CUSHIONED SNAGGING WHEELS

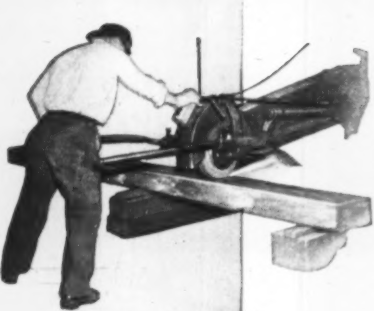

A SHOCK-ABSORBING LINER HERE
CREATES MORE EFFICIENT, LONGER LIFE HERE
A ROUND SMOOTH LINER HERE
MAKES MOUNTING EASIER HERE
A SMOOTH, NON-ABRASIVE LINER HERE
ELIMINATES WEAR HERE



Whether you use MID-WEST'S new automatic grinders, or hand-operated swing-frame grinders...

- Mid-West snagging wheels are easier to mount!
- Their greater efficiency cuts grinding costs!
- And they're easier on your operator!

Mid-West designed fiber-cushioned centers, plus Mid-West's special resinoid bond—an extremely tough, tenacious bond—assure increased production and lower grinding costs per ton! For complete information regarding fiber-cushioned snagging wheels—write, wire or phone today.

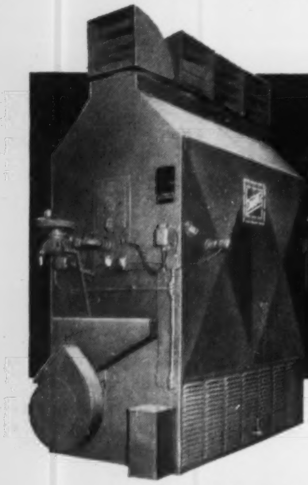


MID-WEST ABRASIVES

EXECUTIVE OFFICES: 510 SOUTH WASHINGTON ST., OWOSSO, MICH.
FACTORIES: OWOSSO, MICH. • ROCHESTER, PENNA.

Announcing **DRAVO'S**

COMPLETE LINE OF HEATERS



THE DRAVO *Counterflo...*

40 Model:
400,000 to 2,000,000 Btu/hr output
For large commercial and industrial buildings

THE DRAVO *Paraflo...*

4 Models
200,000 to 250,000 Btu/hr output
For smaller industrial or commercial buildings

THE DRAVO *Gas Fired* **UNIT HEATER...**

68,000 to 172,000 Btu/hr output
10 Models
For stores, service stations and other small buildings

ALL DRAVO HEATERS have automatic temperature control and a minimum efficiency of 80%... require no ductwork ... are ideal for heating in the winter, ventilation in the summer and for process drying.

DRAVO
CORPORATION
Sales Representatives in Principal Cities

Send the coupon for complete information

DRAVO CORPORATION, Heating Department
Fifth and Liberty Avenues, Pittsburgh 22, Penna.

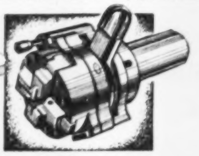
Please send me complete information about the Dravo:

☐ **Counterflo Space Heater** ☐ **Paraflo Space Heater**
☐ **Gas Fired Unit Heater**

☐ Please have a representative call at no obligation to me.
Ask for Bulletin EF -465

Name ______ Title ______
Company ______
Address ______
City ______ Zone ______ State ______

H&G Insert Chaser DIE HEADS



famous for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

THE EASTERN MACHINE SCREW CORP., 22-42 Barclay Street, New Haven, Conn. Pacific Coast Representative: *A. C. Berbringer, 334 N. San Pedro St., Los Angeles, California.* Canada: *F. F. Barber Machinery Co., Toronto, Canada.*

WHEELING STEEL CORPORATION
WHEELING, WEST VIRGINIA

COP-R-LOY PIPE-SHEETS

Ductillite
THE MODERN TIN PLATE

LA BELLE CUT NAILS

WHEELING STEEL

SPRINGS | STAMPINGS | WIRE FORMS

M. D. Hubbard Spring Company 401 Central Ave., Pontiac 12, Mich.

If your product belongs in Metalworking

...your advertising belongs in STEEL!

You advertise in STEEL to reach
ALL 4 buying influences...
management, production, engineering, purchasing.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 166

Seattle — Rolling mill operations are unchanged. New business consists of small tonnages but volume is fair.

Structural Shapes . . .

Structural Shape Prices, Page 166

Boston — For fabricating steel, Androscoggin river bridge, continuous 6-span plate girder, 1810 tons, low bid was 13.16c per pound, Phoenix Bridge Co. Same shop quoted 29.52c per pound on 31 tons, bearing devices and anchor bolts.

Other low quotations for fabricating 87 beam span bridges for Maine turnpike extension were: Bancroft & Martin, 17 bridges, 12.30c for fabricating steel and 27.00c, bearing devices and anchor bolts, total of 1740 tons; Ernst Construction Corp., Buffalo, 11 bridges, 11.53c fabricating and 18.00c, bearings and anchor bolts, total of 6846 tons (contract 207B); Ernst Construction Corp., 59 spans, 11.99c fabricating steel and 18.23c bearing devices and anchor bolts, total 360 tons (contract 207C.)

New York—The number of structural projects under consideration is increasing, due not particularly to any flurry but rather to the fact builders are taking longer time to make up their minds. There is a greater disposition to shop around. Awards meanwhile are scattered, although overall volume is up a little since first of the year. This trend, it is believed, will likely reach peak some time this spring.

Shapes are in good supply except for the light wide flange sections, and even these are not nearly so scarce as they were several weeks ago. The heavy wide flange sections in short supply for many months, are now easily available.

Philadelphia—While bids went in last week on a 12,000-ton section of the Delaware River Port Authority bridge between Philadelphia and Gloucester, N. J., bridgework otherwise is light. For instance, 58 Pennsylvania state bridge projects that have come out since the first of the year, at least as of the last few days, have involved only 1200 tons, and of these, two jobs have accounted for half the tonnage.

Pittsburgh — Construction companies are expecting quicker deliveries of standard shapes. Delivery of wide flange beams still requires more than 30 days in many cases, and light beams are tight.

Seattle — Sizable tonnages of shapes for Bonneville Power Administration remain pending, also 3500 tons for The Dalles dam. Largest structural job up for early action is the Air Force hangar at Moses Lake, Wash., 2500 tons, bids Mar. 10.

Rails, Cars . . .

Track Material Prices, Page 169

Chicago—Railroad sales are down markedly from a year ago. The carriers are keeping their commitments for rails and track accessories to the minimum.

Pig Iron . . .

Pig Iron Prices, Page 170

New York—Blast furnace production including pig iron, ferromanganese, spiegeleisen and silvery iron, last year amounted to 75,842,759 net tons, according to the American Iron & Steel Institute. Output was at 95.5 per cent of capacity, and of the total production, 74,987,721 tons were pig iron and 855,038 tons ferromanganese, spiegel and silvery iron.

In 1952 the nation's blast furnaces produced 62,158,591 net tons, representing 84.2 per cent of capacity. Of the total output 61,528,665 tons were pig iron, and 629,926 tons ferromanganese, spiegel and silvery iron.

Blast furnace capacity in 1953 was given as 79,380,240 net tons, up sharply from the 73,782,340 tons reported for 1952.

Comparative production data are shown in the table below.

Buffalo — Reduction in foundry melt is reflected in demand for merchant pig iron. Mixed tendencies rule the market but automotive interests continue the leading consumers.

Boston—With few exceptions, pig iron consumers are operating with small inventories and the foundry melt barely holds at four days per

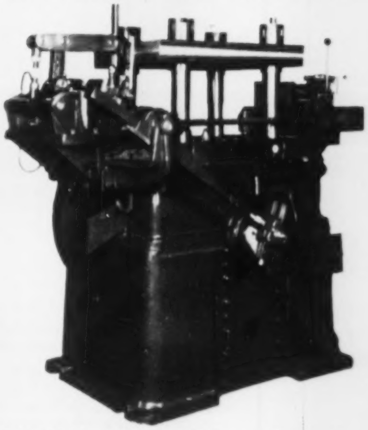
BLAST FURNACE PRODUCTION

(Net Tons)

	1953		1952	
Producing Districts	Pig Iron	Ferromanganese, Spiegel, Silvery Iron	Pig Iron	Ferromanganese, Spiegel, Silvery Iron
Eastern	14,722,955	314,448	11,636,647	285,959
Pittsburgh-Youngstown	26,856,709	424,279	22,740,705	259,898
Cleveland-Detroit	8,337,121	......	6,478,102	......
Chicago	15,598,685	23,686	12,682,741	......
Southern	5,554,960	92,625	4,950,051	84,069
Western	3,867,291	......	3,040,419	......
Total	74,987,721	855,038	61,528,665	629,926

Count
your
savings
with

BRANDES
AUTOMATIC
PRESSES



BRANDES PRESSES are built for precision Progressive Die work featuring larger die areas, and precision alignment of punch and dies through the multiple patented "V" ways in the bed.—Result: longer die life at higher production speeds.

The BRANDES PRESS is available in sizes from 30 Ton to 2500 Ton Capacities. They are engineered to assure long, continuous, uninterrupted production at a minimum cost. Naturally, you will want to know more about these claims . . . . so let us supply the facts. A wire, letter, call or post card will bring them to you without delay . . . . and without obligation.

The Brandes Press Co.

6408 EUCLID AVE.
CLEVELAND 3, O.

METZGAR
Floor-to-Floor
CONVEYORS
HAVE
MANY USES

trend
Saves up to 9/10 the Cost of an Elevator
CAN BE INSTALLED IN STAIR WELL
PUSH BUTTON CONTROL AVAILABLE
ELEVATION BOOSTER IN GRAVITY LINE
CARRIES CONVEYOR OVER FIRE DOORS OR TRAFFIC LANES

Easy to install standard O. A. widths — 18", 22", 30". Length as required. Top quality 3-ply 28 oz. duck with thick traction rubber top. Reversible direction of travel. 3-phase gearhead motor.

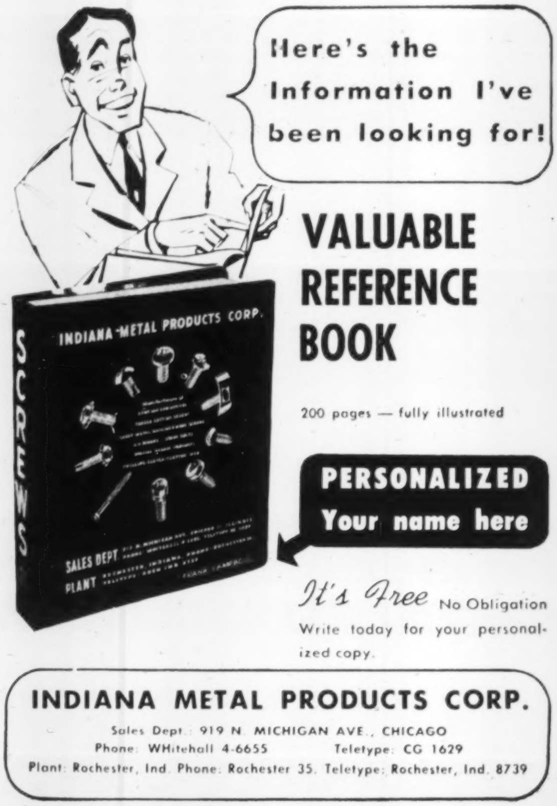
ASK OUR ENGINEERS FOR SPECIFIC SUGGESTIONS

METZGAR CONVEYOR CO.

409 DOUGLAS N. W.

MFRS. OF WHEEL & ROLLER GRAVITY & LIVE ROLLER CONVEYORS • POWER BELT CONVEYORS • SWITCHES • ACCESSORIES & REEL DOLLIES

GRAND RAPIDS 4, MICH.



Here's the Information I've been looking for!
INDIANA METAL PRODUCTS CORP.
SCREWS
SALES DEPT
PLANT

VALUABLE REFERENCE BOOK

200 pages — fully illustrated

PERSONALIZED
Your name here

It's Free No Obligation
Write today for your personalized copy.

INDIANA METAL PRODUCTS CORP.
Sales Dept.: 919 N. MICHIGAN AVE., CHICAGO
Phone: WHitehall 4-6655 Teletype: CG 1629
Plant: Rochester, Ind. Phone: Rochester 35. Teletype: Rochester, Ind. 8739

THE BELMONT IRON WORKS

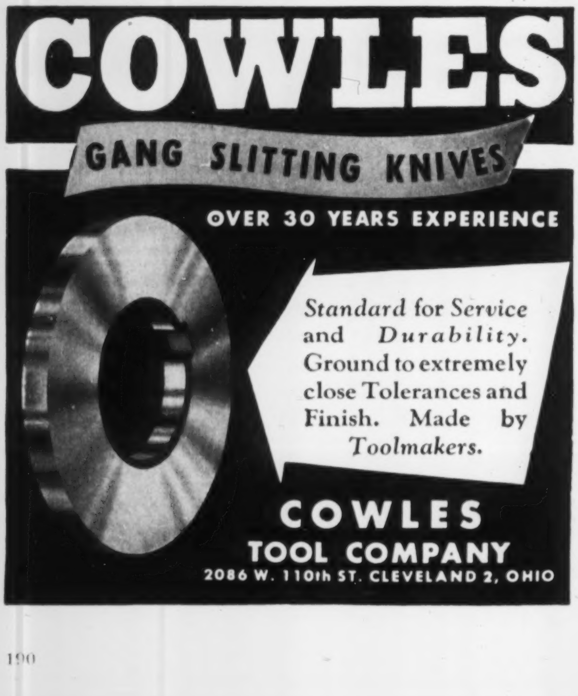
AISC

STRUCTURAL STEEL—BUILDINGS & BRIDGES
RIVETED—ARC WELDED *Cable Address—Beliron*

Engineers—Fabricators—Erectors—Contractors—Exporters
Shops—Philadelphia—Eddystone—Royersford
Main Office: Phila. 46, Pa.
New York Office—44 Whitehall St., N. Y. 4, N. Y.

The *Cleveland Steel Tool Co.*
• PUNCHES • DIES • CHISELS • RIVET SETS •

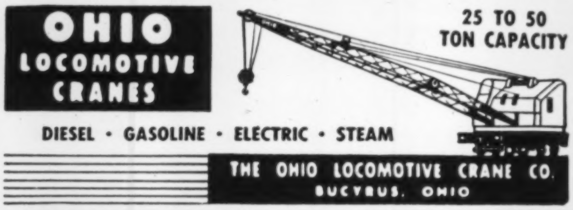
IF IT'S *RIVETED* YOU KNOW IT'S SAFE
•
WE FEATURE SPECIAL PUNCHES & DIES
660 E. 82nd ST., CLEVELAND, O.



COWLES
GANG SLITTING KNIVES
OVER 30 YEARS EXPERIENCE

Standard for Service and Durability. Ground to extremely close Tolerances and Finish. Made by *Toolmakers.*

COWLES TOOL COMPANY
2086 W. 110th ST. CLEVELAND 2, OHIO



OHIO LOCOMOTIVE CRANES

25 TO 50 TON CAPACITY

DIESEL • GASOLINE • ELECTRIC • STEAM

THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS, OHIO

INTRODUCTION TO THE STUDY OF HEAT TREATMENT OF METALLURGICAL PRODUCTS
By Albert Portevin

Fundamental knowledge and essential principles of heat treatment of steel are presented in simple and understandable manner. Research engineers, metallurgical students and steel plant metallurgists engaged in metallurgical investigations and the heat treatment of ferrous and non-ferrous metals will find this book of inestimable value.

246 pages **4 tables**
69 illustrations **Price $5.00 Postpaid**

THE PENTON PUBLISHING CO.
Book Department, 1213 W. 3rd St., Cleveland 13, O.

week. More tonnage is offered by outside furnaces while production is under restricted draft at the Everett furnace.

Philadelphia—Pig iron business remains sluggish with consumers buying hand-to-mouth and with small, if any, improvement in their over-all needs. Daily movement may be up a trifle in March, but most sellers anticipate little change before April, if then. Foreign, as well as domestic sellers, are being hit by the lag.

Cleveland — Spotty foundry operations are reflected in continued sluggish movement of merchant pig iron. While some shops are consuming iron at a substantial rate, others, principally jobbing foundries, are not doing much and are not particularly interested in stockpiling with iron available on relatively short notice from furnaces. Some piling of iron in furnace yards is reported.

Cincinnati—Business appears to be a little better than in January with a few more orders coming in. More pig iron producers are absorbing freight.

Chicago—Pig iron market sentiment is a bit mixed. Some consumers reappraise their requirements and stocks and request delay in shipments by producers. Others ask for bigger shipments than those scheduled. Other than a little more activity in some farm equipment foundries total demand for iron is unchanged. Only 34 of the district's 43 blast furnaces are operating.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1090 tons, nurses' residence, Queens Hospital, Jamaica, N. Y., through John T. Brady & Co., general contractors, to Grand Iron Works, Bronx, New York.

750 tons, boiler supports, Miami, Fla., for Combustion Engineering Inc., New York, to Pittsburgh Bridge & Iron Works, Pittsburgh.

620 tons, store, Lord & Taylor, Philadelphia, through Fordyce & Hamby, engineers, to Bethlehem Fabricators Inc., Bethlehem, Pa.

600 tons, also 55 tons steel piling, Missouri river diversion dam, near Wolf Point, Mont.; Thayne Costruction Co., Salt Lake City, Utah, low $4,085,350.

600 tons, rehabilitation of the South Ferry terminal, Municipal Department of Marine & Aviation, New York, to Klevens Corp., that city.

490 tons, St. Peter's School and convent, Yonkers, N. Y., through Walter A. Stanley Construction Co., to White Plains Iron Works, White Plains, N. Y.

285 tons, store, W. T. Grant Co., Santa Ana, Calif., to Bethlehem Steel Co., Bethlehem, Pa.

280 tons, state highway bridge, Embden-Solom, Me., to Bethlehem Steel Co.; A. P. Wyman Inc., Waterville, Me., general contractor; Bancroft & Martin Rolling Mills Co., South Portland, Me. 120 tons reinforcing bars and H-beam piles.

165 tons, addition, crane runway, building 52, General Electric Co., Schenectady, N. Y., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

155 tons, laboratory and residence, Bronx Hospital, New York, through Rheinstein Construction Co., general contractor, to Pecker Iron Works, Brooklyn, N. Y.

105 tons, boiler house, Downington Paper Co., Downington, Pa., to Belmont Iron Works, Eddystone, Pa.

STRUCTURAL STEEL PENDING

1500 tons, hangar No. 8, Idlewild, Long Island, for Port of New York Authority; alternate bids on concrete construction also asked.

1000 tons, marine loading station, Department of Sanitation, 135th street and Hudson river, New York; F. D. Rich Co., that city, low on general contract.

435 tons, state bridge, Franklin county, Pennsylvania, John H. Swanger Inc., Lancaster, Pa., awarded general contract.

225 tons, senior high school, Tredyffrin Township, near Paoli, Pa., Baton Construction Corp., Philadelphia, awarded general contract.

REINFORCING BARS . . .

REINFORCING BARS PLACED

180 tons, Washington state overcrossings, King and Lewis counties, to Northwest Steel Rolling Mills Inc., Seattle; John E. Alexander, Vashon, Wash., and Pakar Construction Co., general contractors.

150 tons, dormitory buildings, Hanscomb Air Force Base, Bedford, Mass., to Bethlehem Steel Co.; Platt Construction Co., Cambridge, Mass., general contractor; Standard Iron Works, structural steel.

REINFORCING BARS PENDING

1750 tons, diversion dam near Wolf Point, Mont.; Thayne Construction Co., Salt Lake City, Utah, low $4,085,350.

200 tons, two Washington state highway projects, Cowlitz and Clark counties; general awards to Strong & Macdonald, Tacoma, Wash., $79,632 and Natt McDougall Co., Portland, Oreg., $74,783, respectively.

PIPE . . .

CAST IRON PIPE PLACED

500 tons, 12 and 6 in. pipe, for Spokane.

(*Please Turn to Page* 194)

Your machining department for hardened and precision ground screw machine products. Send for brochure & equipment list.

Ottawa
OTTAWA STEEL PRODUCTS OSP INC.
STEEL PRODUCTS INC.
Grand Haven
Michigan

QUANTITY PRODUCTION OF GREY IRON CASTINGS

*

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

*

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

LEWIS
TRAVEL-CUT
automatic, high-speed heavy-duty
WIRE STRAIGHTENING
and
CUTTING MACHINES
Sizes for .012" to ¾" WIRE
ROUNDS & SHAPES
THE LEWIS MACHINE CO.
3450 E. 76 ST., CLEVELAND, O.

CHEMSTEEL CONSTRUCTION COMPANY, INC.
203 Chemsteel Bldg., Walnut St., Pittsburgh 32, Pa.

(No "tie-in" with any manufacturer)
Send data on your Design, Engineering & Construction Facilities for erection of
ACID-ALKALI-PROOF
TANKS & FLOORING

NAME............................
COMPANY.........................
ADDRESS.........................
CITY.............ZONE..STATE....

IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Feb. 11	$27.50
Feb. 4	27.83
Jan. Avg.	29.05
Feb. 1953	43.00
Feb. 1949	38.48

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	29.00-30.00
No. 2 bundles	24.00-25.00
No. 1 busheling	29.00-30.00
Machine shop turnings	14.00-15.00
Mixed borings, turnings	*14.00-15.00*
Short shovel turnings	18.00-19.00
Cast iron borings	18.00-19.00
Cut structurals	33.00-34.00
Heavy turnings	*28.00-29.00*
Punchings & plate scrap	32.00-33.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Charging box cast	34.00-35.00
Heavy breakable cast	31.00-32.00
Unstripped motor blocks	24.00-25.00
No. 1 machinery cast	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	30.50-31.50
Rails, 2-ft. and under	45.00-46.00
Rails, 18-in. and under	46.00-47.00
Rails, random lengths	38.00-39.00
Railroad specialties	33.00-34.00

Stainless Steel Scrap

(F.o.b. shipping point)

18-8 bundles & solids	165.00-170.00
18-8 turnings	85.00-90.00
430 bundles & solids	85.00-87.00
430 turnings	60.00-62.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	*25.00-26.00*
No. 2 heavy melting	*21.00-22.00*
No. 1 bundles	*25.00-26.00*
No. 2 bundles	*19.00-20.00*
No. 1 busheling	*25.00-26.00*
Machine shop turnings	11.00-12.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	15.00-16.00
Cast iron borings	15.00-16.00
Low phos	*26.00-27.00*
Alloy free, short shovel turnings	17.00-18.00
Electric furnace bundles	*26.00-27.00*

Cast Iron Grades

No. 1 cupola	40.00-41.00
Charging box cast	28.00-29.00
Stove plate	35.00-36.00
Heavy breakable cast	24.00-25.00
Unstripped motor blocks	23.00-24.00
Brake shoes	32.00-33.00
Clean auto cast	42.00-43.00
No. 1 wheels	38.00-39.00
Burnt cast	29.50-30.50
Drop broken machinery	41.00-42.00

Railroad Scrap

No. 1 R.R. heavy melt.	28.00-29.00
R.R. malleable	40.00-41.00
Rails, 3-ft. and under	42.00-43.00
Rails, 18 in. and under	45.00-46.00
Rails, random lengths	38.00-39.00
Cast steel	33.00-34.00
Railroad specialties	33.00-34.00
Uncut tires	*35.00-36.00*
Angles, splice bars	40.00-41.00
Rails, rerolling	40.00-41.00

Stainless Steel

(F.o.b. shipping point)

18-8 bundles, solids	nom. 160.00-170.00
18-8 turnings	nom. 70.00-80.00
430 clips, bundles, solids	nom. 70.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	*27.00-28.00*
No. 2 heavy melting	*25.00-26.00*
No. 1 bundles	*27.00-28.00*
No. 2 bundles	*23.00-24.00*
Machine shop turnings	13.00-14.00
Short shovel turnings	18.00-19.00
Cast iron borings	18.00-19.00
Low phos.	*28.00-29.00*
Electric furnace bundles	*28.00-29.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*29.00-30.00*

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*26.00*
No. 2 heavy melting	*23.00*
No. 1 bundles	*26.00*
No. 2 bundles	*21.00*
No. 1 busheling	27.00
Electric furnace bundles	*28.00*
Machine shop turnings	*14.00*
Mixed borings, turnings	*16.00*
Short shovel turnings	*20.00*
Structurals & plate	*31.00*
Heavy turnings	*24.00*
Couplers, springs, wheels	33.00
Rail crops, 2 ft & under	40.00-41.00

Cast Iron Grades

No. 1 cupola	*34.00-35.00*
Heavy breakable cast	36.50-37.50
Unstripped motor blocks	28.00
Drop broken machinery	40.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	18.00
No. 2 heavy melting	16.00
No. 1 bundles	18.00
No. 2 bundles	14.00
Mach. shop turnings nom	7.00-8.00
Mixed borings, short turnings nom.	10.00-11.00
Low phos. (structural & plate)	25.00-26.00
Short shovel turnings	*9.00-10.00*

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unstripped motor blocks	21.00-22.00

Stainless Steel

18-8 sheets, clips, solids	160.00-165.00
18-8 borings, turnings	*80.00-85.00*
430 sheets, clips, solids	*50.00*
410 sheets, clips, solids	*40.00*

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	16.00-16.50
No. 2 heavy melting	13.00-13.50
No. 1 bundles	15.00-15.50
No. 2 bundles	11.00-11.50
Machine shop turnings	5.00-5.50
Mixed borings, turnings	6.00-6.50
Short shovel turnings	9.00-9.50
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	36.00-37.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	23.00-24.00
No. 2 heavy melting	20.00-21.00
No. 1 bundles	23.00-24.00
No. 2 bundles	18.00-19.00
No. 1 busheling	23.00-24.00
Machine shop turnings	10.00-11.00
Mixed borings, turnings	13.50-14.50
Short shovel turnings	13.50-14.50
Cast iron borings	13.50-14.50
Low phos., 18-in.	31.00-32.00

Cast Iron Grades

No. 1 cupola	37.00
Heavy breakable cast	32.00
Charging box cast	32.00
Drop broken machinery	*42.00*

Railroad Scrap

No. 1 R.R., heavy melt	29.00-30.00
Malleable	32.00-33.00
Rails, 18-in. and under	43.00-44.00
Rails, random lengths	36.00-37.00

CHICAGO

No. 1 heavy melting	26.00-28.00
No. 2 heavy melting	*21.00-22.00*
No. 1 factory bundles	28.00-29.00
No. 1 dealer bundles	*23.00-24.00*
No. 2 bundles	20.00-21.00
No. 1 busheling	26.00-28.00
Machine shop turnings	*9.00-10.00*
Mixed borings, turnings	*9.00-10.00*
Short shovel turnings	*11.00-12.00*
Cast iron borings	*11.00-12.00*
Cut structurals, 3-ft	*29.00-30.00*
Punchings & plate scrap	*30.00-31.00*
Electric furnace bundles	30.00-31.00

Cast Iron Grades

No. 1 cupola	29.00-30.00
Stove plate	24.00-25.00
Unstripped motor blocks	19.00-20.00
Clean auto cast	*35.00-36.00*
Drop broken machinery	34.00-35.00

Railroad Scrap

No. 1 R.R. heavy melt.	*28.00-30.00*
R.R. malleable	37.00-38.00
Rails, 2-ft. and under	*39.00-40.00*
Rails, 18-in. and under	*40.00-41.00*
Angles, splice bars	*34.00-36.00*
Rails, rerolling	36.00-37.00

Stainless Steel Scrap

18-8 clips & solids	130.00-140.00
18-8 turnings	60.00
430 clips & solids	42.00
430 turnings	nom. 25.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	18.25
No. 2 heavy melting	17.00
No. 1 bundles	19.00
No. 2 bundles	17.50
No. 1 busheling	18.50
Machine shop turnings	7.00
Mixed borings, turnings	7.00
Short shovel turnings	10.00
Punchings & plate scrap	21.00

Cast Iron Grades

No. 1 cupola	35.00
Charging box cast	25.00
Stove plate	28.00
Heavy breakable	25.00
Unstripped motor blocks	18.00
Clean auto cast	40.00
Malleable	30.00

BUFFALO

No. 1 heavy melting	24.50-25.50
No. 2 heavy melting	21.50-22.00
No. 1 bundles	24.50-25.50
No. 2 bundles	19.50-20.00
No. 1 busheling	24.50-25.50
Machine shop turnings	12.00-13.00
Mixed borings, turnings	14.00-14.50
Short shovel turnings	15.00-15.50
Cast iron borings	14.00-14.50
Low phos.	28.50-29.50

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	27.50-28.50
No. 1 machinery	32.50-33.50

Railroad Scrap

Rails, random lengths	31.50-32.50
Rails, 2-ft and under	36.50-37.50
Railroad specialties	34.50-35.50

BIRMINGHAM

No. 1 heavy melting	26.00-26.50
No. 2 heavy melting	24.00-24.50
No. 1 bundles	26.00-26.50
No. 2 bundles	22.00-22.50
Cast iron borings	17.00-18.00
Short shovel turnings	17.00-18.00
Machine shop turnings	19.00
Cut structurals	nom.
Electric furnace bundles	nom.

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	41.00-42.50
Charging box cast	30.00-31.00
Stove plate	38.00-39.00
Bar crops and plate	31.00-32.00
Plate and structurals	31.00-32.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	nom.
Rails, 2-ft. and under	42.00-43.00
Rails, random lengths	39.00-40.00
Angles, splice bars	38.00-39.00
Rails, rerolling	46.00-47.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	27.00
No. 2 heavy melting	25.00
No. 1 bundles	27.00
No. 2 bundles	22.00
Machine shop turnings	*8.00*
Short shovel turnings	*10.00*

Cast Iron Grades

No. 1 cupola	37.00
Charging box cast	25.00
Heavy breakable cast	25.00
Unstripped motor blocks	25.00
Brake shoes	*31.00*
Clean auto cast	37.00
Stove plate	*27.00*

Railroad Scrap

No. 1 R.R. heavy melt	*29.00*
Rails 18-in. and under	42.00
Rails, random lengths	*33.00*
Rails, rerolling	*36.00*
Uncut tires	*31.00*
Angles, splice bars	*33.00*

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	*25.00*
No. 2 heavy melting	*21.00*
No. 1 bundles	*22.00*
No. 2 bundles	*16.00*
No. 3 bundles	*13.00*
Machine shop turnings	*11.50*
Mixed borings, turnings	*11.50*
Short shovel turnings	*11.50*
Electric furnace, No. 1	36.00-38.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	35.00-37.00
Heavy breakable cast	25.00-32.00
Unstripped motor blocks	23.00
No. 1 wheels	38.00-40.00
Stove plate	29.00

Railroad Scrap

(Delivered consumer plant)

Rails, random lengths	30.00-34.00

SAN FRANCISCO

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 1 busheling	20.00
Machine shop turnings	5.00
Mixed borings, turnings	5.00
Short shovel turnings	9.00
Cast iron borings	9.00
Cut structurals	25.00
Heavy turnings	9.00
Punchings & plate scrap	25.00
Electric furnace bundles	19.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	29.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

LOS ANGELES

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	18.00
No. 2 bundles	16.00
Machine shop turnings	5.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	35.00-38.00

HAMILTON, ONT.

(Delivered prices)

No. 1 heavy melting	$26.00
No. 2 heavy melting	23.00
No. 1 bundles	26.00
No. 2 bundles	21.00
Mixed steel scrap	20.00
Mixed borings, turnings	15.00
Rails, remelting	35.00
Busheling, new factory: Prepared	24.00
Busheling, new factory: Unprepared	20.00
Short steel turnings	15.00

Cast Iron Grades†

No. 1 machinery cast	42.00

---

†F.o.b., shipping point.

THE ROLE OF SCRAP IN CREATING WEATHER

ALTITUDE CHAMBERS

Simulate complete range of atmospheric conditions anywhere on earth — or above it.

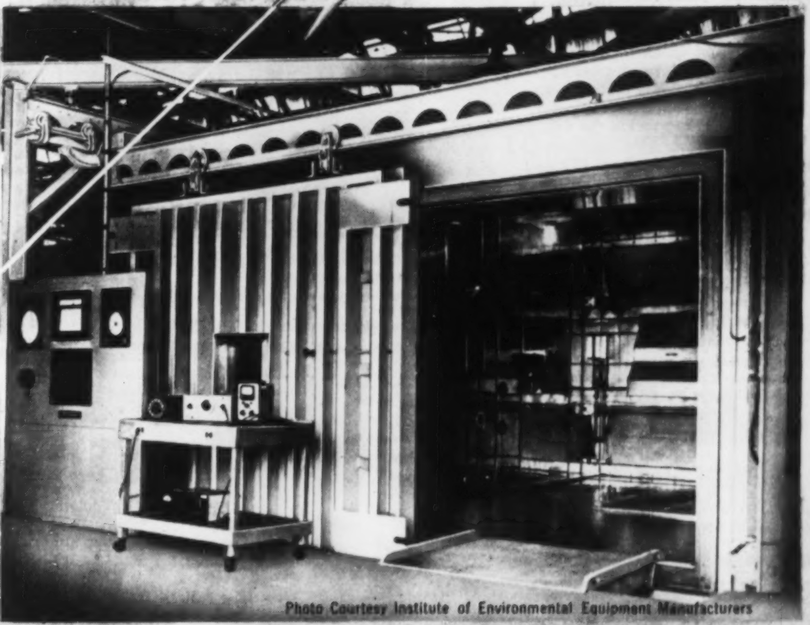


Photo Courtesy Institute of Environmental Equipment Manufacturers

Industry doesn't gamble anymore on the effect unknown temperatures, atmosphere or pressure conditions will have on products.

For accuracy, an Altitude Chamber is used. This amazing engineering development provides vacuum conditions that simulate altitudes from sea level to 80,000 feet; determines climatic effects on physical quality, fragility, moisture retention, tension, corrosion, durability and other factors important to quality standards and Government specifications.

The Chamber is built of heavy rolled steel plate. The stainless steel used is Type 18-8, Class 302, 304 or 316.

These special steels require special scrap of known analysis — a problem particularly suited to our experience, personnel, equipment and strategic locations of our field offices.

POSSIBLY OUR FACILITIES MAY HELP YOU SOLVE A SPECIAL PROBLEM IN IRON OR STEEL SCRAP

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

LURIA BROTHERS AND COMPANY, INC.

MAIN OFFICE
LINCOLN-LIBERTY BLDG.
Philadelphia 7, Penna.

PLANTS

LEBANON, PENNA
READING, PENNA
MODENA, PENNA
DETROIT (ECORSE), MICHIGAN
PITTSBURGH, PENNA
ERIE, PENNA

OFFICES

BIRMINGHAM, ALA
BOSTON, MASS
BUFFALO, N. Y.
CHICAGO, ILLINOIS
CLEVELAND, OHIO
DETROIT, MICH
HOUSTON, TEXAS
LEBANON, PENNA
LOS ANGELES, CAL
NEW YORK, N. Y.
SEATTLE, WASH
PITTSBURGH, PENNA
PUEBLO, COLORADO
READING, PENNA
ST. LOUIS, MO.
SAN FRANCISCO, CAL

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

LABOR WITH HIGH PQ*

in CHARLESTON, S. C.

*PQ (production quotient) is the most important quality your industrial workers can have. Charleston's workers, efficient, willing and quick to learn, rate tops in productivity.

There are plenty of men—and women, too—in the Charleston area who can tackle the jobs in your industry with interest, enthusiasm and the high PQ that pays off for all industries here.

●

IT ALL ADDS UP TO LOWER COSTS:

plenty of power . . . industrial sites . . . ocean shipping . . . fast transportation . . . co-operative community . . . natural gas . . . soft water . . . productive labor . . . ideal climate . . . good living . . .

Ask us for proof:

CHARLESTON

DEVELOPMENT BOARD

Arthur M. Field, Chief Engineer

CHARLESTON, SOUTH CAROLINA

WARD STEEL CO.

We specialize in

FINISHED STEEL

BARS—TUBES—STRIP

PROMPT WAREHOUSE SERVICE ONLY

Most Complete Stock in America of

BLUE TEMPERED SPRING STEEL

We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.

87A Rindge Ave. Ext. Phone UN 4-2460
CAMBRIDGE 40, MASS.

Branches:
3042-3058 W. 51st Street, CHICAGO, ILL.
Phone: Grove Hill 6-2600

Fenner Street, Providence, R. I.
Phone: Gaspee 1-5573, 1-8573

Advertising Index

Acme Equipment Co., Inc. 195
Aetna-Standard Engineering Co., The Inside Back Cover
Ajax Electric Co., Inc. 20
Allegheny Ludlum Steel Corporation 29
Allis-Chalmers Inside Front Cover
American Chain & Cable, American Chain Division 179
American Chemical Paint Co. 184
American MonoRail Co. 131
American Screw Co. 91
American Steel & Wire Division, United States Steel Corporation 18
American Welding & Manufacturing Co., The 58
American Wheelabrator & Equipment Corporation 46
American Zinc, Lead & Smelting Co. 165
American Zinc Sales Co. 165
Armstrong-Blum Manufacturing Co. 61
Atlas Car & Mfg. Co., The 10

Babcock & Wilcox Co., The, Refractories Division 119
Bailey, William M., Co. 182
Baker-Raulang Co., The 75
Baldwin-Lima-Hamilton, Standard Steel Works Division 124
Barber-Colman Co. 21
Bedford Foundry & Machine Co., Inc. 12
Belmont Iron Works, The 190
Bethlehem Steel Co. 1
Bixby, R. W., Inc. 194
Bliss, E. W., Co. 45
Brad Foote Gear Works, Inc. 48
Brandes Press Co., The 189
Bridgeport Brass Co. 156, 157

Cameron Iron Works, Inc., Forge & Ordnance Division 171
Carlson, G. O., Inc. 185
Carpenter Steel Co., The 37
Charleston Development Board 194
Chemical Corporation, The 5
Chemsteel Construction Co., Inc. 191
Chicago Steel Service Co. 120
Cincinnati Grinders, Inc. 76
Cincinnati Shaper Co., The 23
Clark Equipment Co., Industrial Truck Division 132
Cleveland Crane & Engineering Co., The, Cleveland Tramrail Division 148
Cleveland Steel Tool Co., The 190
Cleveland Tramrail Division, The Cleveland Crane & Engineering Co. 148
Cold Metal Products Co., The 116, 117
Columbia-Geneva Steel Division, United States Steel Corporation 17, 18, 19
Columbus McKinnon Chain Corporation 146
Cowles Tool Co. 190
Crucible Steel Company of America 134, 135, 183

Dalton Supply Co. 195
Detroit Broach Co 126, 127
Detroit Steel Corporation, Reliance Steel Division 62
Dravo Corporation, Heating Department 188
Dulien Steel Products, Inc. 195
Du Pont, E. I., de Nemours & Co., Inc. 35

Eastern Machine Screw Corporation, The 188, 195
Elastic Stop Nut Corporation of America 175
Electric Controller & Mfg. Co., The 106
Electro Metallurgical Co., A Division of Union Carbide & Carbon Corporation 139
Elox Corporation of Michigan 177

Fafnir Bearing Co., The 26

(Continued on Page 196)

(Concluded from Page 191)

Wash., to Pacific States Cast Iron Pipe Co., Provo, Utah.

CAST IRON PIPE PENDING

300 tons or more, 13,000 ft of cast iron pipe, or alternatives; Alderwood District; bids to Ivy Stallsmith, secretary, Alderwood Manor, Wash., Feb. 15.

300 ft or more, 66,000 ft 4 and 6-in.; Juanita District No. 72, Seattle; U. S. Pipe & Foundry Co., Birmingham, low $112,738 for cast iron; Pacific Waterworks Supply Co., Seattle, low $82,038 for steel.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Illinois Central, 50 diesel units, to Electro-Motive Division, General Motors Corp., La Grange, Ill. List includes forty-eight 1750-hp general purpose units and two 2400-hp passenger units.

Nickel Plate, 25 diesel units, twenty-three 1600-hp diesel switchers going to American Locomotive Co., New York, and two 1600-hp all service switchers to Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

RAILROAD CARS PLACED

Denver & Rio Grande Western, 10 caboose cars to its own shops.

CLASSIFIED

Help Wanted

WANTED

National Steel warehouse wants 2 top-notch salesmen or sales managers with THOROUGH KNOWLEDGE of either steel tubing or aluminum, to be trained as product managers of newly formed divisions in Chicago. All replies confidential. Reply Box 917, STEEL, Penton Bldg., Cleveland 13, Ohio.

EXPERIENCED METALLURGICAL SALES ENGINEER for sales development work in connection with hot extrusion of alloys and stainless steel materials in various forms. Applicant must have good knowledge of metallurgy and have had sales contact experience. Applications confidential. Please give full details to Box 919, STEEL, Penton Bldg., Cleveland 13, Ohio.

EXPERIENCED STEEL SALESMAN, with college education, for Eastern Pennsylvania, Baltimore and Washington. Salary and incentive plan. Will turn over present producing accounts, and will expect agressive sales effort. If interested, send resume of past experience including earnings and photograph. H. K. PORTER COMPANY, INC. of Pittsburgh, BUFFALO STEEL DIVISION, TONAWANDA, N. Y.

Positions Wanted

PLANT OR PRODUCTION MANAGER. Experience covers all phases of plant operation and control, including, costs, methods improvement, incentives and labor relations. M.I.T. graduate. Reply Box 868, STEEL, Penton Bldg., Cleveland 13, Ohio.

STRUCTURAL SHOP SUPERINTENDENT

Age 40. Experience covers all phases of operation of Structural Shop including Engineering and Cost. Reply Box 918, STEEL, Penton Bldg., Cleveland 13, Ohio.

BLAST FURNACE SUPERINTENDENT or ASSISTANT. Engineering graduate with twenty years practical experience in blast furnace, coke and sintering plant operations. Also training in cost accounting and industrial engineering. Reply Box 920, STEEL, Penton Bldg., Cleveland 13, Ohio.

DROP FORGE SUPERVISOR AVAILABLE—MECHANICAL ENGINEER—15-year supervision, 12-year forging engineer. Experienced in all phases of production and equipment. Employed but desire change. Reply Box 921, STEEL, Penton Bldg., Cleveland 13, Ohio.

Employment Service

SALARIED POSITIONS $5,000 to $35,000. We offer the original personal employment service (established 44 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC., 665 Brisbane Bldg., Buffalo 3, N. Y.

RAILROAD EQUIPMENT—*FOR SALE*

USED — AS IS — RECONDITIONED

STANDARD GAUGE FREIGHT CARS

Ballast, Hart Convertible, Composite, 50-Ton
Box, Steel Sheathed, 40-Ton Capacity
Box, Double Sheathed, 50-Ton Capacity
Box, Single Sheathed, 50-Ton Capacity
Flat, 50-Ton, Steel Underframe, 40′6″ Long

Gondolas, Composite, or All Steel 50-Ton and 70-Ton
Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Ore Hoppers, All-Steel, 50-Ton, Heavy Duty
Tank, 3,000-Gallon, High Pressure
Tank, 8,000-Gallon, Coiled and Non-Coiled

Hoppers, All Steel, 70-ton, Triple Hopper Cross Dump

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70′

CABOOSE CARS

Eight Wheel, Cupola Type

AUSTIN-WESTERN 30-YARD AIR DUMP CARS; STANDARD GAUGE; 50-TON, SIDE DUMP, DROP DOOR

OTHER EQUIPMENT

Jordan Spreader
Locomotive Cranes
Overhead Cranes
Railroad Track Scales

ONE ALCO STANDARD GAUGE DIESEL-ELECTRIC LOCOMOTIVE

100-TON, 600 H.P., TYPE 0-4-4-0
NEW AND RELAYING RAIL
WE BUY FREIGHT CARS FOR DISMANTLING

Send us your inquiries

SERVICE-TESTED
REPAIR PARTS
For
All Types of
Freight Cars

IRON & STEEL PRODUCTS, INC.

General Office
13462 S. Brainard Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1212

New York Office
50-D. Church Street
New York 7, N. Y.
Phone: BEekman 3-8230

"ANYTHING containing IRON or STEEL"

Send us your offerings

STORAGE TANKS
6,000 Gallon
8,000 Gallon
10,000 Gallon

MECHANICAL ENGINEER REQUIRED

Expanding Plant in Western Ontario requires Metallurgical Engineer with experience in Carbon Alloy and Stainless steels. Applicants should give experience, age and salary expected.

Reply Box 910, STEEL
Penton Bldg. **Cleveland 13, Ohio**

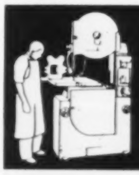
THREADED
Rods

10 to 12 ft. lengths
ALL METALS
Also Screw Machine Products to Order

EASTERN
Machine Screw Corp.
New Haven, Conn.
Makers of H & G Die Heads

GENERAL SUPERINTENDENT

Midwest steel plate fabricator including storage tanks and pressure vessels offers excellent opportunity to man qualified by experience to supervise production, scheduling, engineering and plant maintenance. Give full details as to qualifications, experience and salary required. Replies strictly confidential. Reply Box 906, STEEL, Penton Building, Cleveland 13, Ohio.



TANNEWITZ

DI-SAWS, VARIABLE SPEED BAND SAWS, FRICTION SAWING BAND SAWS, SPECIAL SAWING MACHINERY. Write or phone

The TANNEWITZ WORKS
Grand Rapids, Mich., Ph. GL-6-1729

FOR SALE

New, Allegheny Metal 25-20 (Type 310) Annealed only. 38—Bars 3″ x ½″ x 144″ and 3—Bars 3″ x ⅝″ x 144″ 40c per hundred weight, F.O.B. Pittsburgh, Pa.

Reply Box 916, STEEL
Penton Bldg. **Cleveland 13, Ohio**

INDUSTRIAL SALES OPPORTUNITY

Manufacturer of nationally advertised industrial parts cleaning equipment seeks financially responsible firm to handle complete line in Southwestern territory. Attractive commission arrangement. Send complete resume of qualifications and experience. Interview arranged at your convenience. Write Box 909, STEEL, Penton Building, Cleveland 13, Ohio.

RELAY RAILS

AND ACCESSORIES

Largest Inventory on Pacific Coast

DULIEN STEEL PRODUCTS, INC.
OF WASHINGTON
P. O. Box 3386 **Seattle 14, Wash.**

INDUSTRIAL STEEL CONTAINERS

800—USED

10 Ga. galv. riveted shipping containers, 33″ high by 24″ dia. with water tight rubber gasket sealed removable lid. Jaybolt fastened, weight 127#. Can be used for transportation of chemicals, paints, solvents, metal parts. They are galv., painted Alum., inside and outside. In excellent condition.

Orig. Cost—$40.00 ea.
Our price:—$10.00 ea.
F.O.B. Phila.

Dalton Supply Co.
2829 Cedar St. **Phila., Pa.**

Contract Manufacturing Facilities Available For

CUSTOM-BUILT MEDIUM and HEAVY MACHINERY

Steel Fabricating Shop—Grey Iron Foundry
Pattern Shop—Machine Shop

OPEN TIME NOW

Quality Workmanship—Prompt Service
Engineering Service Available

For Complete Information, Write, Wire or Phone
ROBERT HOLMES & BROS. INC.
2-E Junction Ave., Danville, Illinois

ELECTRIC MELTING FURNACES *For Sale-Cheap*

ELECTROMELT TYPE C Side Charge, 2 ton per hour rated capacity. 7000# to 8000# usual heats. Can handle 16,000# heats. Late-type transformers. 1200 KVA, 13,200 volt primary. Complete with controls.

DETROIT ELECTRIC FURNACE, 1500# capacity, 13,200 primary voltage. Kuhlman transformers. Complete with controls.

DETROIT ELECTRIC FURNACE, 350# capacity, Type LFA with Kuhlman transformers and oil circuit breaker.

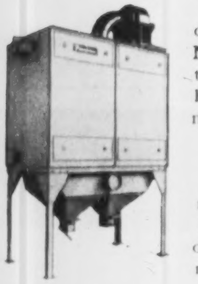
ACME EQUIPMENT CO., Inc. **128B South Clinton St., Chicago 6, Ill., Andover 3-3430**

PANGBORN SPEEDS UP PRODUCTION, LOWERS COST

WITH PRECISION FINISHING . . .

Pangborn Hydro-Finish Cabinet—Removes scale and directional grinding lines . . . holds tolerances to .0001" and prepares surfaces for painting or plating. Liquid blast reduces costly hand cleaning and finishing of molds, dies, tools, etc. Models from . . . **$1410** and up.

AND DUST CONTROL



Pangborn Unit Dust Collector—Traps dust at the source. Machine wear and tear is minimized, housekeeping and maintenance costs reduced. Solves many grinding and polishing nuisances and allows reclamation of valuable material. Models from . . . **$286** and up

Pangborn Blast Cleaning Machines for cleaning tanks, bridges, structures quickly and economically. Portable and stationary models, 6 sizes . . . $188 and up. Cabinet for cleaning small metal parts better and faster . . . $319 and up.

Write for details on these machines to: PANGBORN CORPORATION, 1600 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control equipment

Pangborn

STOCK UNITS

Advertising Index

(Concluded from Page 194)

Federal Bearings Co., Inc., The 7
Felters Co., The 140

Gardner-Denver Co. 36
General American Transportation Corporation 93
Gisholt Machine Co. 49
Great Lakes Steel Corporation 80
Greenfield Tap & Die Corporation 123
Grieder Industries, Inc. 11

Hamilton Tool Co., The 15
Harnischfeger Corporation 30, 31
Harnischfeger Corporation, Welding Division 50, 51
Hartford Special Machinery Co., The 130
Haynes Stellite Co., A Division of Union Carbide & Carbon Corporation 22
Heald Machine Co., The 2
Heppenstall Co. 88
Holmes, Robert, & Bros., Inc. 195
Horsburgh & Scott Co., The 143
Hubbard, M. D., Spring Co. 188

Illinois Gear & Machine Co. 103
Indiana Metal Products Corporation 190
Industrial Crane & Hoist Corporation 34
Inland Steel Co. 66
Iron & Steel Products, Inc. 195

Jarecki Machine & Tool Co. 32
Jones & Laughlin Steel Corporation 54, 83

Kenilworth Steel Co., The 87
Kennametal, Inc. 149
Koppers Co., Inc., Engineering & Construction Division 38, 39

Lapointe Machine Tool Co., The 13
Lee Rubber & Tire Corporation, Republic Rubber Division 52
Lewis Machine Co., The 191
Lincoln Electric Co., The 6
Lindberg Engineering Co. 33
Lindberg Steel Treating Co. 28
Linde Air Products Co., A Division of Union Carbide & Carbon Corporation 40
Link-Belt Co. 24
Loftus Engineering Corporation 8, 9
Luria Brothers & Co., Inc. 193

Mahon, R. C., Co., The 53
Malleable Founders' Society 174
Mannesmann-Meer Engineering & Construction Co. 147
Metzgar Conveyor Co. 190
Mid-West Abrasive Co. 187
Minnesota Mining & Mfg. Co. 55

National Carbon Co., A Division of Union Carbide & Carbon Corporation 105
National Steel Corporation 80
National Tube Division, United States Steel Corporation 18
Newport Steel Corporation 160
New York & New Jersey Lubricant Co. 180
Norton Co. 42, 43

Oakite Products, Inc. 125
Ohio Locomotive Crane Co., The 190
Osborn Manufacturing Co., The 3
Ottawa Steel Products, Inc. 191

Pangborn Corporation 196
Parker Appliance Co., The, Rubber Products Division 150, 151
Pittsburgh Lectromelt Furnace Corporation, The 178
Platecoil Division, Tranter Manufacturing, Inc. 44
Pratt & Whitney Division Niles-Bement-Pond Co. 97

Reliance Steel Division, Detroit Steel Corporation 62
Republic Rubber Division, Lee Rubber & Tire Corporation 52
Republic Steel Corporation 14
Republic Steel Corporation, Alloy Steel Division 25
Reynolds Metals Co. 94
Rolock, Inc. 133
Ryerson, Joseph T., & Son, Inc. 65

Sharon Steel Corporation 84
Shenango-Penn Mold Co., Centrifugal Castings Division 152
Solar Steel Corporation 145
Special Engineering Service, Inc. 176
Square D Co. 47
Standard Steel Works Division, Baldwin-Lima-Hamilton 124
Steel Equipment Co. 153
Surface Combustion Corporation 100, 101

Tannewitz Works, The 195
Tapecoat Co., The 16
Tennessee Coal & Iron Division, United States Steel Corporation 17, 18, 19
Thomas Flexible Coupling Co. 158
Timken Roller Bearing Co., The, Steel & Tube Division Back Cover
Toledo Steel Roll Co. 184
Tranter Manufacturing, Inc., Platecoil Division 44
Treadwell Engineering Co. 98

Union Carbide & Carbon Corporation, Electro Metallurgical Co. 139
Union Carbide & Carbon Corporation, Haynes Stellite Co. 22
Union Carbide & Carbon Corporation, Linde Air Products Co. 40
Union Carbide & Carbon Corporation, National Carbon Co. 105
Union Wire Rope Corporation 41
United Engineering & Foundry Co. 57
United States Steel Corp., Subsidiaries 17, 18, 19, 136
United States Steel Export Co. 17, 18, 19
United States Steel Supply Division, United States Steel Corporation 17, 18, 19, 136

Veeder-Root, Inc. 4

Wallingford Steel Co., The 27
Ward Steel Co. 194
Washburn Wire Co. 56
Wheeling Steel Corporation 188
Wheland Co., The 191

~ ~ ~

Table of Contents, Page 5
Classified Advertising, Pages 194, 195

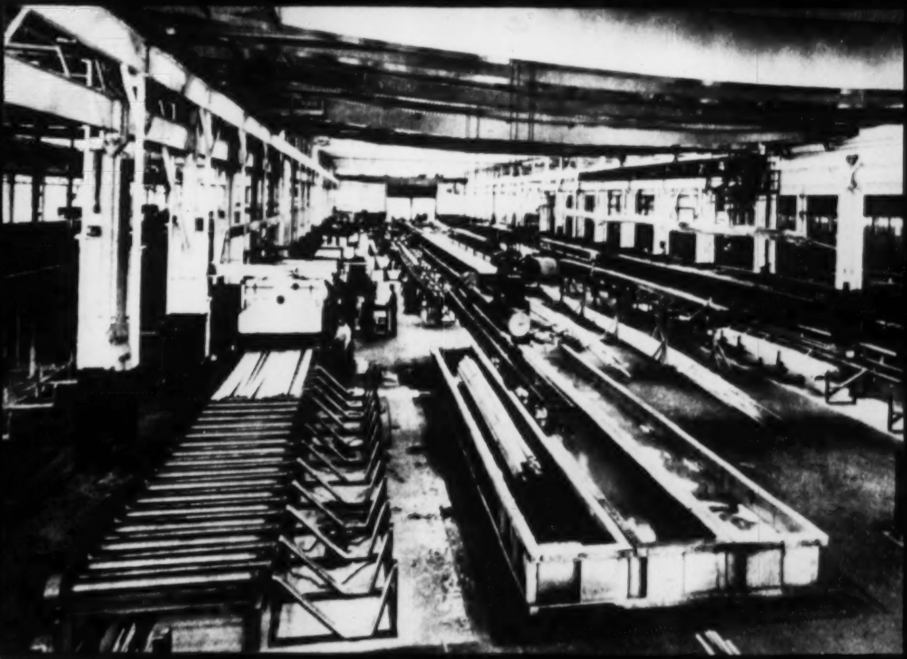
GOOD EQUIPMENT BRINGS DOWN PRODUCTION COSTS

drawbenches

• Whatever the requirement for cold drawing equipment, Aetna-Standard can deliver. This company specializes in cold drawbenches, wire drawing and other equipment for drawing steel, copper, brass, aluminum and other ferrous and non-ferrous materials. Aetna's benches range in pulling capacity from 1,000 to 200,000 pounds pulling capacity with single, double or triple drawing.

In addition to drawbenches, Aetna builds such equipment as hydraulic squeeze pointers, bull blocks, piercing mills for the brass and copper industry, wire drawing machines and pointers.

A pioneer in cold drawing, Aetna-Standard has been building equipment since 1904 and developed many of the innovations in the business.



THE AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

Aetna-Standard

PLANTS IN WARREN, OHIO • ELLWOOD CITY, PENNSYLVANIA

ASSOCIATED COMPANIES

Head Wrightson Machine Company, Ltd., Middlesbrough, England — Great Britain, Finland, Sweden, Norway, Denmark, Union of South Africa, Northern and Southern Rhodesia.
Aetna-Standard Engineering Company, Ltd., Toronto, Ontario, Canada.
M. Castellvi, Inc., New York, N. Y. — Mexico, Central and South America.
Societe de Constructions de Montbard, Paris, France — France, Belgium, Holland, Luxembourg, Switzerland.
Demag Aktiengesellschaft, Duisberg, Germany — Germany, Austria, Yugoslavia, Greece, Turkey, Egypt.
Compagnia Italiana Forme Acciaio, Milano, Italy — Italy.
Aetna-Japan Company, Ltd., Tokyo, Japan — Japan.
Hale & Kullgren, Inc., Akron, Ohio — Representative for the Rubber Industry.

Designers and Builders to the Ferrous, Non-Ferrous, Leather, Rubber, and Plastic Industries

Which of these 22 tube steels will give *you* maximum tube life per dollar? *Ask the experts!*

This month's report is on: **2% CR.-MO.**

Has intermediate corrosion resistance in combination with good creep strength and fair resistance to oxidation. For use at temperatures up to 1200° F. in cracking coils, reforming units, heat exchangers, vapor line and hot oil piping, and return-bend forgings for oil heaters.

ONE OF 24 TIMKEN HIGH TEMPERATURE STEELS

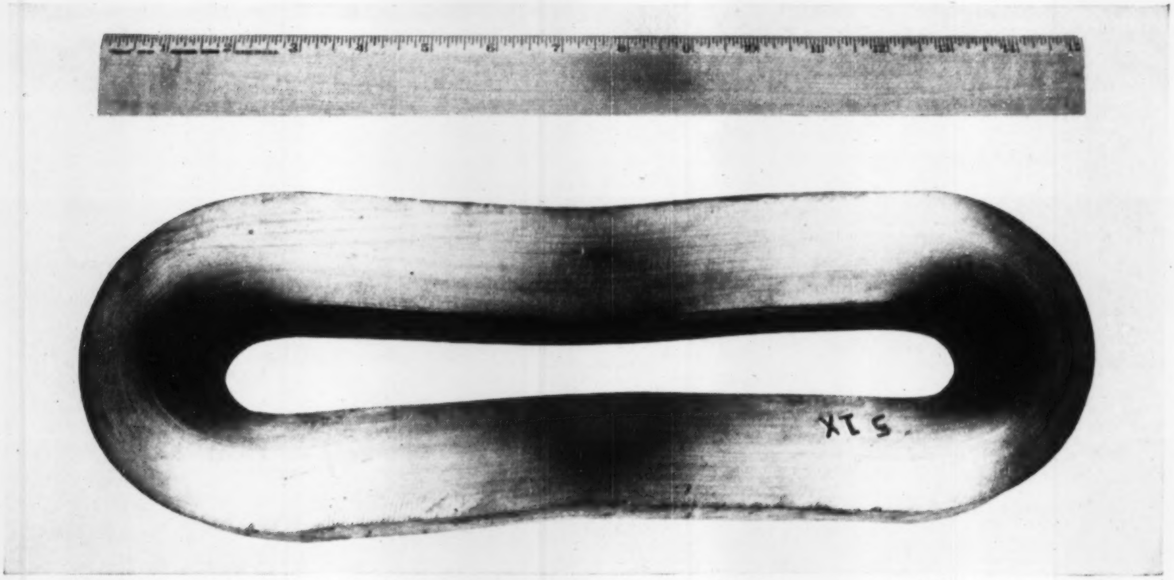
Carbon	Sicromo 2	Sicromo 5S	18-8 Ti
Carbon-Mo.	Sicromo 2½	Sicromo 5MS	16-13-3
DM-2	2½% Cr.-1% Mo.	Sicromo 7	25-20*
Silmo	Sicromo 3	Sicromo 9M	25-12*
DM	4-6% Cr.-Mo.	18-8 Stainless	35-15**
2% Cr.-Mo.	4-6% Cr.-Mo.-Ti.	18-8 Cb	16-25-6**

** Available as seamless tubing on an experimental basis only.*
***Not available as seamless tubing.*

FOR every high temperature application, there's one tube steel that gives you the best life-cost ratio. One steel best answers your particular set of temperature-pressure-corrosion-oxidation conditions. That's why the Timken Company makes the 24 different high temperature steels shown in the box at left.

To find the one best steel for each of your applications, ask the Timken Company metallurgists. They're experts. They know how to balance the various factors against cost—and recommend the analysis that gives you maximum tube life per dollar of cost. They've been doing it for 20 years. And remember—regardless of analysis, you get uniform quality in every Timken® tube because we rigidly control quality at every step from melt shop through final inspection.

Put our "RSQ"—Research, Supply, Quality—to work on *your* tube problems. *Ask the experts!* The Timken Roller Bearing Company, Steel & Tube Division, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



Flattened test of 10½" O.D. by 1.580" wall of 18-8 Cb showing the excellent ductility of large, heavy-wall Timken seamless tubing.

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

TIMKEN
TRADE-MARK REG. U.S. PAT. OFF.
Fine Alloy
STEEL

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING